AD-A156 068 DOD VALUE ENGINEERING CONFERENCE REPORT VALUE ENGINEERING (VE) - A TOOL T.. (U) DOD PRODUCT ENGINEERING SERVICES OFFICE ALEXANDRIA VA 1/3

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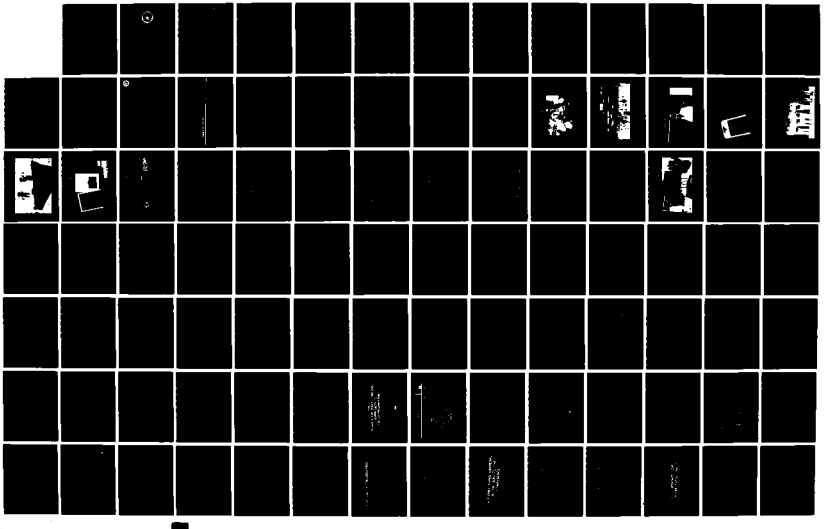

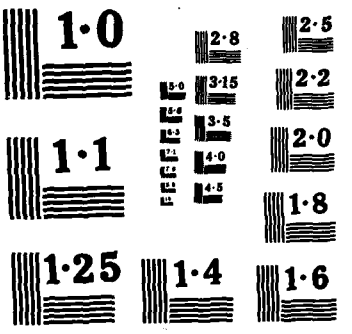

1984 DOD VALUE ENGINEERING CONFERENCE REPORT

"VE - A TOOL THAT BENEFITS LINE MANAGEMENT"

PART II

PLENARY SESSION

1-2 NOVEMBER 1984

XEROX INTERNATIONAL CENTER FOR TRAINING AND MANAGEMENT DEVELOPMENT

LEESBURG, VIRGINIA

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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19 KEY WORDS (Continue on reverse side if necessary and identify by block number)

Value Engineering
Conference Report,

20 ABSTRACT (Continue on reverse side if necessary and identify by block number)

This Conference Report summarizes and consolidates the proceedings from the 1984 DoD Value Engineering Conference held 1-2 November in Leesburg, VA. The findings and recommendations with supporting material from the five workshops are provided in addition to the complete plenary session presentations. An Executive Summary is presented in PART I.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

85-7-9102

1984 DoD Value Engineering Conference Report

PART II

PLENARY SESSION

DOD VE CONFERENCE

AGENDA

DAY 1 - OCTOBER 31, 1984

TIME	EVENT	SPEAKER	LOCATION
1500-1900	Registration	-------	Service Desk
1730-1900	Buffet Dinner	-------	Cafeteria
1900-2100	"No-Host" Mixer/Social	-------	Lounge
1930-2100	Planning Meeting with Conf. Chairman, Conf. Coordinator, Workshop Chairmen, and Vice Chairmen	Conf.Coordinator	Room 3475

DAY 2 - NOVEMBER 1, 1984

0700-0800	Breakfast	-------	Cafeteria
0800-0830	Late Registration	-------	Service Desk
0830	Welcome	Conf. Chairman	Room 2464-2466
0845	Administrative Announcements	Conf. Coordinator	Room 2464-2466
0855	Keynote Speaker	M. Gilleece, DUSDRE(AM)	Room 2464-2466
0915	General Dynamics Corp.	J. Jackson	Room 2464-2466
0940	Martin Marietta Corp.	J. Angiulli	Room 2464-2466
1000-1015	Coffee Break	-------	Coffee Stand
1015	Hughes Aircraft Company	W. Copperman	Room 2464-2466
1040	VE at ESD	BG Cabell	Room 2464-2466
1105	FMC Corporation	C. Huffman	Room 2464-2466
1130	FAR/DoD FAR Supplement	H. Pryor	Room 2464-2466
1200-1315	Lunch	-------	Cafeteria
1315-1500	Workshop A "VE in the Program Office"	BG Weiss	Room 3455-3457
	Workshop B "VEP/VECP"	R. Bruner	Room 3471-3475
	Workshop C "VEP/VECP Administration, Negotiation, and Implementation"	R. Bidwell	Room 2464-2466
	Workshop D "VE Training"	J. McAreavy	Room 3461
	Workshop E "VE in Construction and Architect Engineer Contracts"	A. Bradford	Room 3265

AGENDA

DAY 2 - NOVEMBER 1, 1984 (Cont'd)

TIME	EVENT	SPEAKER	LOCATION
1500-1515	Break	-------	Coffee Stand
1515-1745	Workshops	-------	As Assigned
1745-1915	Dinner	-------	Cafeteria
1930-2100	Video Tape/Discussion Session	-------	Room 3475

DAY 3 - NOVEMBER 2, 1984

0700-0800	Breakfast	-------	Cafeteria
0830-1000	Workshops	-------	As Assigned
1000-1015	Break	-------	Coffee Stand
1030-1145	Workshops	-------	As Assigned
1145-1245	Lunch	-------	Cafeteria
1300-1415	Chairpersons' Report	-------	Room 2464-2466
1415-1430	Conference Summary/ Wrap Up	Conf. Chairman	Room 2464-2466
1430	Adjourn	All	

NOTE/REMINDER

- Please be sure to stop at registration desk at conclusion of your stay.
- Return bus transportation is available to National Airport and Dulles International Airport for a cost of $7.00 to be paid when registering. The bus schedule is set for departure on Friday, November 2, 1984.
- Bus to National Airport - 1500 hours departure (approximate 60-minute trip).
- Bus to Dulles International Airport - 1530 hours departure (approximate 30-minute trip).

"MOVING VALUE ENGINEERING INTO THE MAINSTREAM"

ADDRESS

BY

MS. MARY ANN GILLEECE
DEPUTY UNDER SECRETARY OF DEFENSE (ACQUISITION MANAGEMENT)
OFFICE, UNDER SECRETARY OF DEFENSE
(RESEARCH AND ENGINEERING)

TO THE DOD VALUE ENGINEERING CONFERENCE

ON

NOVEMBER 1, 1984

AT

XEROX INTERNATIONAL TRAINING CENTER
LEESBURG, VIRGINIA

GOOD MORNING LADIES AND GENTLEMEN:

IT IS TRULY GRATIFYING TO SEE THE HIGH LEVEL INTEREST INDICATED BY YOUR ATTENDANCE AND PARTICIPATION IN THIS VERY IMPORTANT CONFERENCE. I WELCOME THE OPPORTUNITY TO SPEAK HERE THIS MORNING BECAUSE THIS CONFERENCE PROVIDES A FORUM FOR A MEETING OF THE MINDS WITHIN THE DEPARTMENT OF DEFENSE ON THIS EXTREMELY IMPORTANT SUBJECT. I ASSURE YOU THAT THE OSD IS WELL AWARE OF THE TIME AND EFFORT BEING INVESTED BY EACH OF YOU AND BY YOUR SPONSORING ORGANIZATIONS. WE APPRECIATE AND NEED YOUR ACTIVE PARTICIPATION, AND I BELIEVE YOU'LL FIND THE EFFORT REWARDING; NOT ONLY FROM THE STANDPOINT OF YOUR CONTRIBUTING TO THE SOLUTION OF A DEFENSE NEED, BUT ALSO FROM THE KNOWLEDGE THAT YOUR OUTPUT WILL BE PUT TO GOOD USE. YOU SEE, WE ARE NOT MERELY STUDYING THE PROBLEMS ASSOCIATED WITH EXPANDING THE APPLICATION OF VALUE ENGINEERING; WE ARE DEVELOPING SOLUTIONS WHICH <u>WILL BE IMPLEMENTED</u>.

OVER THE PAST SEVERAL MONTHS THERE HAS BEEN A LOT OF PUBLICITY ABOUT SHORTCOMINGS IN THE DEFENSE DEPARTMENT'S PROCUREMENT PRACTICES. MANY PEOPLE, HEARING FOR THE FIRST TIME OF THESE PROBLEMS WITH OVERSPECIFICATION, SPARE PARTS, INVENTORY MANAGEMENT, QUALITY ASSURANCE, AND CRIMINAL FRAUD HAVE STRONGLY CRITICIZED THE ADMINISTRATION FOR ITS MANAGEMENT OF THE DEPARTMENT. CALLS FOR IMMEDIATE REFORM OF THE DEPARTMENT'S ACQUISITION SYSTEM HAVE CROWDED THE NEWSPAPERS AND AIRWAVES.

OVER 150 BILLS WERE INTRODUCED IN THE RECENTLY COMPLETED SESSION OF CONGRESS TO HELP US WITH OUR JOBS. WITHOUT WAITING

FOR DOD REFORMS AND INITIATIVES TO TAKE EFFECT, CONGRESS HAS ENACTED LEGISLATION. FOR EXAMPLE:

1. PUBLIC LAW 98-72 REVISED SYNOPSIS PROCEDURES AND SOLICITATIONS TIME FRAMES LENGTHENING THE ACQUISITION PROCESS.

2. THE DOD AUTHORIZATION ACT, 1985, INCLUDES A NUMBER OF PROVISIONS DEALING WITH HOW WE PROCURE SPARE PARTS. TO A LARGE EXTENT, THE PROVISIONS MIRROR OUR REFORMS.

3. PUBLIC LAW 98-369 REVISED NEGOTIATION AND ADVERTISING CONCEPT, ESTABLISHED COMPETITION ADVOCATES, CREATED APPROVAL LEVELS FOR NONCOMPETITIVE ACTIONS AND CODIFIED BID PROTEST PROCEDURES. THIS ACT WILL HAVE FAR REACHING EFFECTS ON THE WAY DOD DOES BUSINESS.

THE ARMED SERVICES PROCUREMENT ACT OF 1947, THE FEDERAL PROPERTY AND ADMINISTRATIVE SERVICE ACT, THE OFFICE OF FEDERAL PROCUREMENT POLICY ACT AND THE BUDGET ACCOUNTING ACT ARE FOUR PIECES OF LEGISLATION AMENDED BY THE COMPETITION IN CONTRACTING ACT. FOR PURPOSES OF PROCUREMENT IT CHANGES ONE-THIRD OF OUR REGULATIONS.

IF YOU THOUGHT YOU KNEW HOW WE DO BUSINESS--FORGET ONE-THIRD OF EVERYTHING YOU NOW KNOW BECAUSE WE ARE GOING TO CHANGE IT BY APRIL 1, 1985. BY LAW WE MUST IMPLEMENT THE CHANGES BY THEN. SO

THOSE OF YOU WHO HAVE NOW BECOME FAMILIAR WITH THE FEDERAL ACQUISITION REGULATION HOLD UP A MINUTE. THERE WILL NO LONGER BE FORMAL ADVERTISING. THERE WILL NO LONGER BE NEGOTIATED PROCUREMENTS. WE ARE NOT ONLY AMENDING ONE-THIRD OF THE REGULATION, BUT WE ARE EVEN CHANGING THE WORDS IN THE LAW. I USED TO HAVE A TERRIBLE TIME SAYING PUBLIC EXIGENCY BUT I KNEW ALL THE LAW CASES MEETING GAO CASE XXXX THAT TOLD US WHAT THAT MEANT. WE NO LONGER USE THOSE WORDS. THEY MADE UP SOME NEW WORDS TO SAY WHAT PUBLIC EXIGENCY MEANS. I HAVE SUGGESTED TO A LAWYER FRIEND OF MINE THAT IT WILL MAKE HIM VERY WEALTHY. EVERY TIME YOU CHANGE A WORD SOMEONE IS GOING TO OBVIOUSLY THINK THERE HAS BEEN A CHANGE IN THE INTERPRETATION PLUS INTENT. I COMMEND YOU TO READ IT (THE LAW) BECAUSE IT IS GOING TO AFFECT EACH AND EVERY ONE OF US IN OUR DAILY LIVES. BY THE WAY OF DISCUSSION, THE DAR COUNCIL AND THE CIVILIAN AGENCY ACQUISITION COUNCIL HAVE RELEASED THEIR FIRST DRAFT OF THE REGULATIONS TO IMPLEMENT THE LAW IN EARLY OCTOBER. THE FINAL VERSION OF THESE REGULATORY CHANGES ARE CURRENTLY BEING PUBLISHED. ALL PEOPLE WITHIN THE GOVERNMENT WILL BE TRAINED TO UTILIZE THE NEW REGULATIONS BY APRIL 1, BECAUSE WE ARE NOT ALLOWED OTHERWISE BY LAW.

NOW WHERE DOES VE FIT INTO ALL OF THIS? IT SHOULD BE OBVIOUS THAT THE RECENT CONGRESSIONAL ACTIVITY BEARING ON THE ACQUISITION PROCESS IS OSTENSIBLY THE RESULT OF SOME REAL, BUT LARGELY PERCEIVED PROBLEMS. WHETHER IT BE SPARE PARTS, COMPETITION OR GOLD-PLATING IT BOILS DOWN TO CONCERN THAT PUBLIC FUNDS ARE SPENT IN THE MOST PRUDENT, COST-EFFECTIVE FASHION. THE OUTPOURING OF

SO CALLED HORROR STORIES IN SPARE PARTS PRICING, DEFECTIVE MATERIAL, FRAUD AND THE LIKE OFTEN REPORTED BY THE PRESS OVER AND OVER AGAIN STIRRED THE FLAMES OF LEGISLATIVE CHANGE. MISTAKES, ERRORS, AND BAD JUDGMENT CALLS ARE INEVITABLE IN HUMAN EXPERIENCE. HOWEVER, THESE MATTERS ARE NOT RAMPANT IN DEFENSE. MOST OF THE CASES OF OVERPRICING RELATE TO LOW VALUE ITEMS. THERE IS NO AMOUNT OF RATIONALE THAT CAN JUSTIFY TO THE PUBLIC PAYING $436 FOR A CARPENTER-TYPE CLAW HAMMER. WE BUY SEVERAL THOUSAND OF THESE HAMMERS ANNUALLY FROM GENERAL SERVICES ADMINISTRATION SUPPLY SOURCES AND PAY $6.40 EACH. WE DISCLOSED THESE PROBLEMS AND SET ABOUT TO FIX THEM.

I VIEW VALUE ENGINEERING AS ONE OF THE PRINCIPAL TOOLS THAT SHOULD BE PINPOINTING AND REMEDYING THESE PROBLEMS. VALUE ENGINEERING IS THE PRINCIPAL INCENTIVE AND ONLY STRUCTURED METHODOLOGY TO ENSURE ELIMINATION OF GOLD-PLATING IN OUR WEAPON SYSTEM DEVELOPMENT PROCESS. WE IN DOD KNOW THE POTENTIAL OF VE AND HAVE RECENTLY TAKEN POSITIVE ACTION TO STRENGTHEN THE APPLICATION OF VE--PARTICULARLY IN THE ACQUISITION OF SPARE PARTS.

THE DAR/FAR HAS BEEN REVISED TO EXPAND THE APPLICABILITY OF THE VE INCENTIVE CLAUSE. THE SERVICES ARE INCLUDING THE INCENTIVE CLAUSE ON ALL CONTRACTS FOR SPARE PARTS AND REPAIR KITS OF $25,000 OR MORE FOR OTHER THAN STANDARD COMMERCIAL PARTS.

ALL SERVICES HAVE SET UP COMPETITION ADVOCATES WHO ARE APPLYING VE/VA IN SPARES ACQUISITION. VE/VA IS APPLIED TO

DETERMINE THE INTRINSIC VALUE OF SPARES. APPLICABILITY OF ALTERNATE AND/OR STANDARD PARTS ARE BEING INVESTIGATED. FULLY COMPETITIVE DATA PACKAGES ARE BEING DEVELOPED. REVERSE ENGINEERING IS UTILIZED AS APPROPRIATE.

THE SERVICES HAVE INCREASED VE MANPOWER. THE ARMY AND DEFENSE LOGISTICS AGENCY (DLA) HAVE RECENTLY MADE DECISIONS TO SIGNIFICANTLY INCREASE THE NUMBER OF VE PERSONNEL. IN THE CASE OF DLA, THE NUMBER OF ASSIGNED FULL-TIME VE PERSONNEL IS BEING MORE THAN DOUBLED FROM 38 TO 78 WITH AN EXPECTED 25-30% INCREASE IN VE SAVINGS.

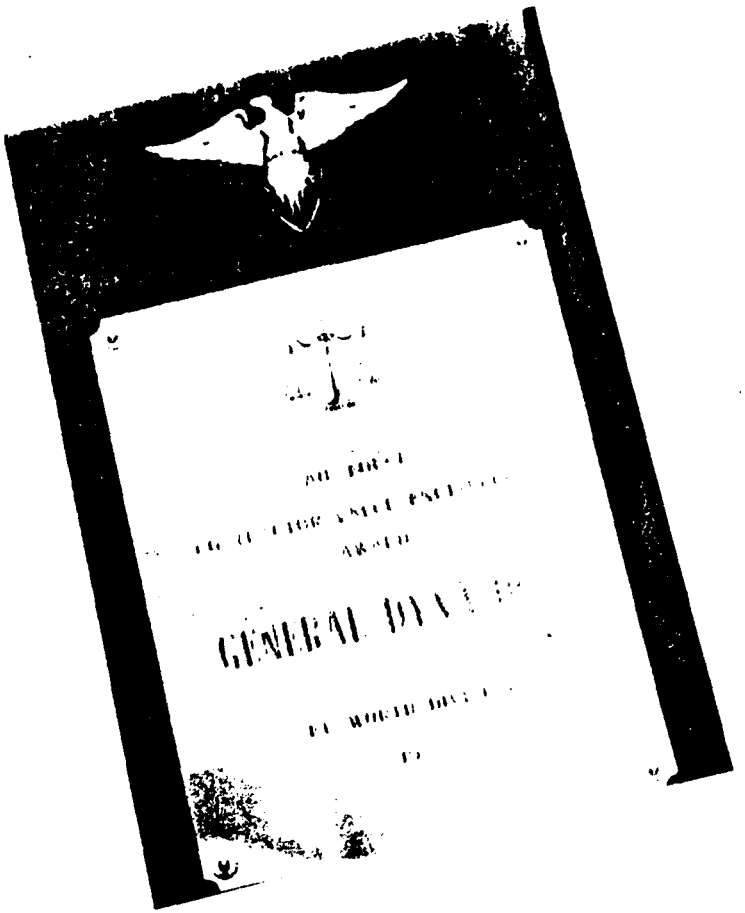
A VE DATA BASE IS BEING DEVELOPED. THE VALUE ENGINEERING DATA INFORMATION SEARCH AND RETRIEVAL SYSTEM (VEDISARS) IS DESIGNED TO STORE, FOR READY RETRIEVAL, INFORMATION ON ACCEPTED AND IMPLEMENTED GOVERNMENT VALUE ENGINEERING PROPOSALS (VEPs) AND CONTRACTOR VALUE ENGINERING CHANGE PROPOSALS (VECPs). THE EXISTING GOVERNMENT INDUSTRY DATA EXCHANGE PROGRAM (GIDEP) WILL BE USED TO IMPLEMENT VEDISARS. A TWO-YEAR PILOT PROGRAM WILL COMMENCE IN THE BEGINNING OF FY 85 WITH THE SERVICES PROVIDING THE INITIAL INPUT. THE DEFENSE/INDUSTRY COMMUNITY CURRENTLY HAS ACCESS TO THE GIDEP SYSTEM AND WILL ALSO HAVE ACCESS TO VEDISARS.

DESPITE THESE INITIATIVES, AS MOST OF YOU ARE AWARE, WE STILL FACE A TREMENDOUS CHALLENGE. VE IS NOT BEING EXPLOITED TO ANYWHERE NEAR ITS POTENTIAL. IN FY 83, OUT OF 104 MAJOR SYSTEMS ONLY 25 REPORTED VE SAVINGS. THAT IS REALLY UNFORTUNATE BUT IS ALSO

Customer Recognition Comes in Many Forms . . . and Should Be Shared with Program Managers!

A60360

Customer Recognition Comes in Many Forms (Cont'd)

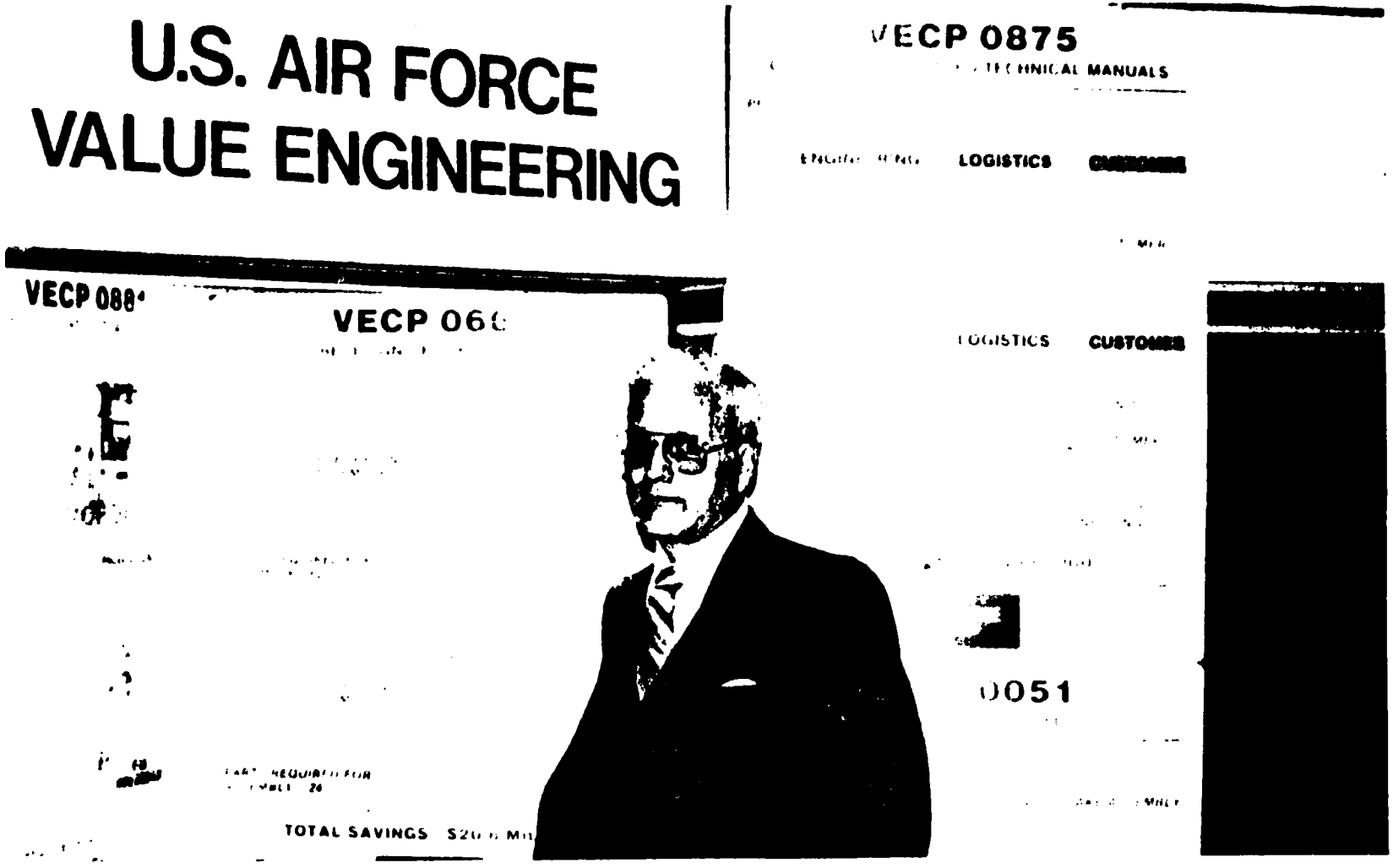


GENERAL DYNAMICS
FORT WORTH DIVISION

1983

Air Force Contractor Value Engineering Award for FY 1982

Customer Recognition Comes in Many Forms (Cont'd) . . .



F-16 VECPs Included in A/F Display . . .

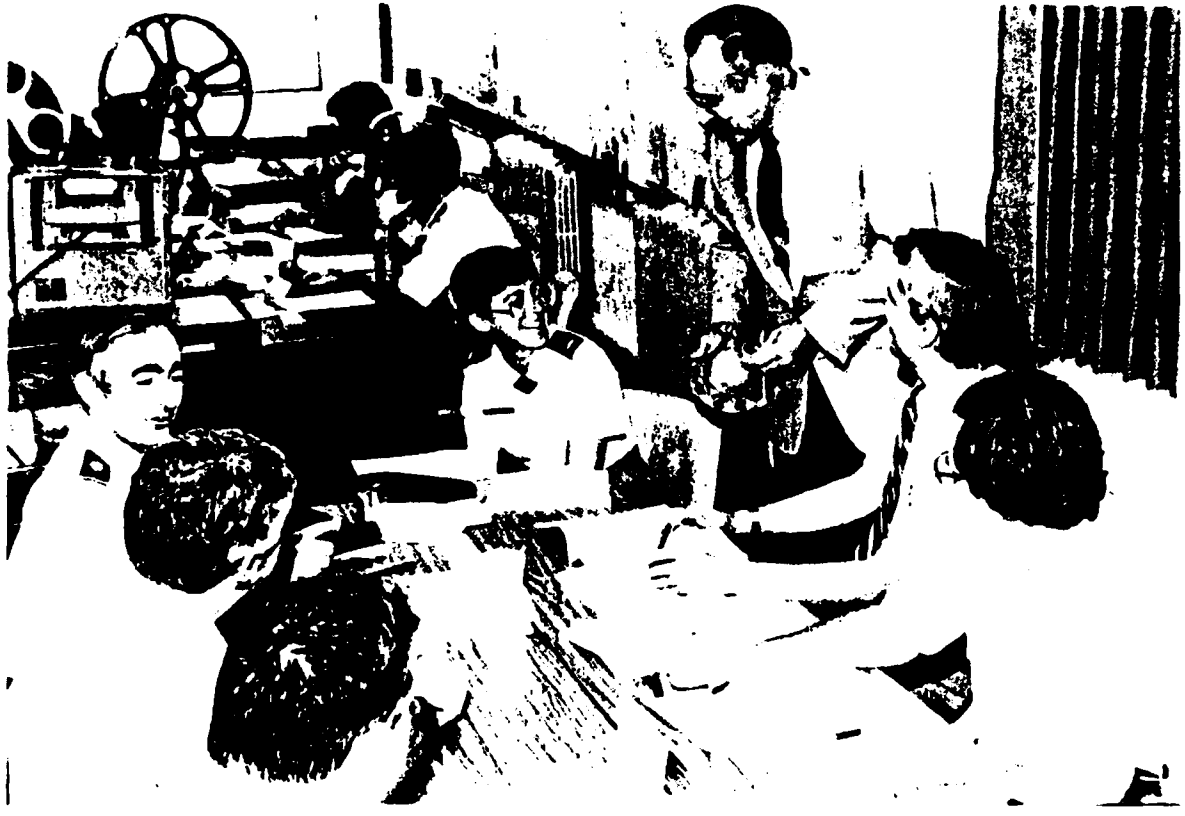
Our Customer Encourages . . Through Participation . . (Cont'd)

Participants in Our 90th Two-Week Seminar

- **AFPRO Chief of Engineering "Opens" Every Seminar**
- **273 of the 3660 Graduates Are Air Force Personnel**

A60359

Our Customer Encourages a Value State of Mind . . . Through Participation . . .



ASD Seminar Teams Look at Improving Value of F-16 Parts . . .

The Groundrules for This Presentation Were Set by DoD

Removing All Constraints . . .

Where (What) Do You Perceive the Opportunities To Be Which Would Help Maximize the Returns to the Department of Defense's Value Engineering Program . . . . ?

Our Inherent Environment/Training:

- **Relatively Easy to Spend Money -**
  - **— Very Difficult to Accept it Back**
- **It Costs Money to Improve the "ilities"**
- **It Costs Money to Reduce Weight**
- **You Only Get What You Pay for**
- **New . . . Improved . . . Cost Less . . . Ridiculous!!!**

ROI 27/1
Value Engineering: Improve the Value of the Product

- **Quality**
- **Reliability**
- **Maintainability**
- **Survivability**
- **Salability**
- **Etc**

Not Necessarily Aimed at Cost Reduction, Per Se . . .

A60345

Why Bother With Value Engineering?

- **Simply Stated: Because it Works . . .**
  - **— 24 Companies Surveyed**
  - **— 19 Full Formal VE Workshops**
  - **— Averaged $9,872,000 Annual Savings**
  - **— Averaged $364,J00 Expenditures**
  - **— ROI 27/1**

A60344

Value Engineering Is Not a Panacea . . .

- **Properly Applied it Is a Management Methodology Which Assures:**
  - **— Maximization of Value Received/$ Spent . . .**

- **But Just Saying the Words Will Not Cause it to Happen!**

Opportunities

A60342

OFFICE OF THE UNDER SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

RESEARCH AND
ENGINEERING

BIOGRAPHICAL DATA

Mary Ann Gilleece
Deputy Under Secretary of Defense
for Research and Engineering
(Acquisition Management)

Mary Ann Gilleece took office as the Deputy Under Secretary of Defense for Research and Engineering (Acquisition Management) in April 1983. Ms. Gilleece was born in Effingham, Illinois, and raised in St. Louis, Missouri. She graduated from the University of Connecticut in 1962 and attended Suffolk University Law School in Boston where she received a Juris Doctor degree in 1972 and in that year became a member of the Massachusetts Bar. In 1982, she received a Master of Laws degree in Government Procurement Law from the George Washington University. Ms. Gilleece is national circuit Vice President of the Federal Bar Association and she is a member of the Federal Bar Association and American Bar Association Public Contracts Sections. She is on the Board of Advisors of the National Contract Management Association.

Prior to her appointment, Ms. Gilleece was appointed an Assistant Attorney General for the Commonwealth of Massachusetts, practiced law privately for a number of years, and served for 6 years as Counsel to the U.S. House of Representatives, Committee on Armed Services. In that position she was responsible for Committee functions relating to Federal contracting legislation and government procurement methods.

As Deputy Under Secretary, Ms. Gilleece serves as the principal advisor to the Under Secretary of Defense for Research and Engineering in all matters concerning management and policy for the Department of Defense acquisition process. She also serves on the Joint Contract Administration Coordinating Council. She is responsible for making procurement system improvements in accordance with Executive Order 12352 of March 17, 1982 on Federal Procurement Reforms and is the DoD member of the OMB Executive Committee on Procurement Reform. Another key area of responsibility is the formulation and execution of DoD international acquisition objectives, policies, and programs for cooperation in research, development, production, and procurement with U.S. Allies. Other major responsibilities include programs to improve the productivity of defense contractors and the production capabilities of the U.S. industrial base.

Ms. Gilleece resides in Alexandria, Virginia.

REBUILD OUR MILITARY FORCES. WHILE THAT MANDATE HAS NOT EVAPORATED, IT HAS BEEN AFFECTED BY THE REVELATIONS OF THE $7,400 COFFEE POT ON THE C-5A AND THE $16,000 REFRIGERATOR ON THE P-3. CONSEQUENTLY, THOSE WHO CONTINUE TO SUPPORT OUR ACTIVITIES ARE INCREASINGLY EMPHASIZING THE NEED FOR A PERVASIVE, COST-CONSCIOUS APPROACH. AMERICANS STILL WANT, AND MUST HAVE, A REBUILT, MODERN, AND STRONG DEFENSE, BUT NOT AT ANY COST. WE MUST ACHIEVE THESE REQUIREMENTS IN THE MOST COST-EFFECTIVE MANNER POSSIBLE. WE MUST SPEND TAX DOLLARS WISELY IN ORDER TO DEMONSTRATE THAT WE ARE EFFECTIVE IN OUR APPOINTED TASK; OTHERWISE, WE WILL BE UNABLE TO MAINTAIN THE NECESSARY PUBLIC AND CONGRESSIONAL SUPPORT NEEDED TO ACCOMPLISH THE REBUILDING OF OUR MILITARY FORCES.

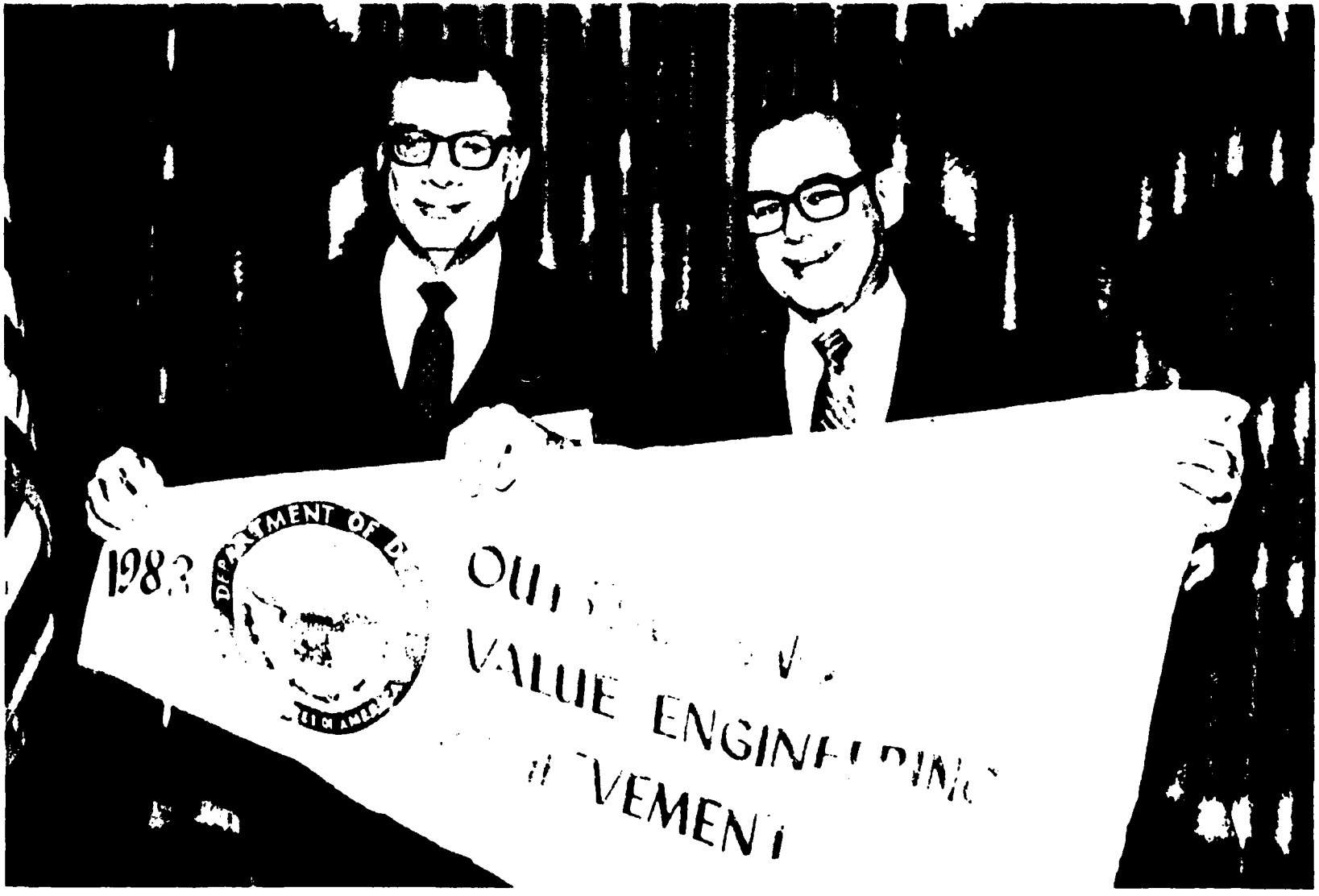
I MAINTAIN THAT THE TIME AND ENVIRONMENT IS RIGHT TO SIGNIFICANTLY EXPAND THE APPRECIATION OF VE. WE IN OSD WANT TO DO THE RIGHT THING TO MAKE THIS HAPPEN. YOUR RECOMMENDATIONS FROM THIS CONFERENCE WILL GET A HIGH LEVEL REVIEW WITHIN OSD. I THINK YOU ALL HAVE AN EXTREMELY IMPORTANT TASK AHEAD OF YOU IN THE NEXT TWO DAYS. I AM LOOKING FORWARD TO SEEING THE RESULTS OF YOUR WORKSHOP. THANK YOU.

INDICATIVE OF HOW MUCH UNTAPPED POTENTIAL THERE IS IN VALUE ENGINEERING. THIS POTENTIAL EXISTS NOT ONLY IN MAJOR SYSTEMS DEVELOPMENT, BUT ALSO IN SPARE PARTS, ARCHITECTURAL AND ENGINEERING, AS WELL AS OTHER AREAS.

THE CHALLENGE THAT WE HAVE TO ADDRESS AT THIS CONFERENCE IS MOVING VE INTO THE MAINSTREAM OF HOW WE DO BUSINESS. WE NEED TO MAKE VE AN INTEGRAL PART OF PROGRAM MANAGEMENT INSTEAD OF JUST ANOTHER TOOL TO BE USED WHEN AND IF A PERSON WILLING TO CHAMPION THE VE CAUSE DEMANDS IT. WE NEED TO GET ALL OUR CONTRACTING OFFICERS, BUYERS, ENGINEERING AND MANUFACTURING PERSONNEL TO THINK VE AS AN INTEGRAL PART OF THEIR DAY-TO-DAY RESPONSIBILITIES. MY EXPERIENCE HAS BEEN THAT PEOPLE ARE USUALLY FOR OR AGAINST VE. THEY SELDOM ARE NEUTRAL ON THE SUBJECT. THE REAL WORLD IS THAT MANY OF OUR PEOPLE ARE "TURNED OFF" ON VE. THIS ATTITUDINAL PROBLEM EXISTS FOR A VARIETY OF REASONS. VE IS VIEWED AS REWARDING CONTRACTORS FOR NOT DOING THE JOB RIGHT THE FIRST TIME. VE IS VIEWED AS A "GET WELL" PROGRAM THAT PROVIDE EXCESSIVE PROFITS TO DEFENSE CONTRACTORS. VE PEOPLE ARE OFTEN VIEWED AS A CLUB OF SPECIALISTS, OF SECOND-GUESSERS, WHO TAKE THE CREDIT AFTER THE DESIGN ENGINEER HAS DONE ALL OF THE WORK. THERE IS OFTEN LITTLE, IF ANY, INCENTIVE FOR OUR PEOPLE TO PUSH VE. IF YOU ARE TO BE SUCCESSFUL IN BRINGING VE INTO THE MAINSTREAM OF THE WAY WE DO BUSINESS, YOU ARE GOING TO HAVE TO ADDRESS AND FIND SOLUTIONS TO THESE ISSUES.

DURING THE PAST FEW YEARS, WE HAVE BEEN SEEKING TO SATISFY THE MANDATE GIVEN THE CURRENT ADMINISTRATION TO MODERNIZE AND

Customer Recognition Comes in Many Forms (Cont'd)



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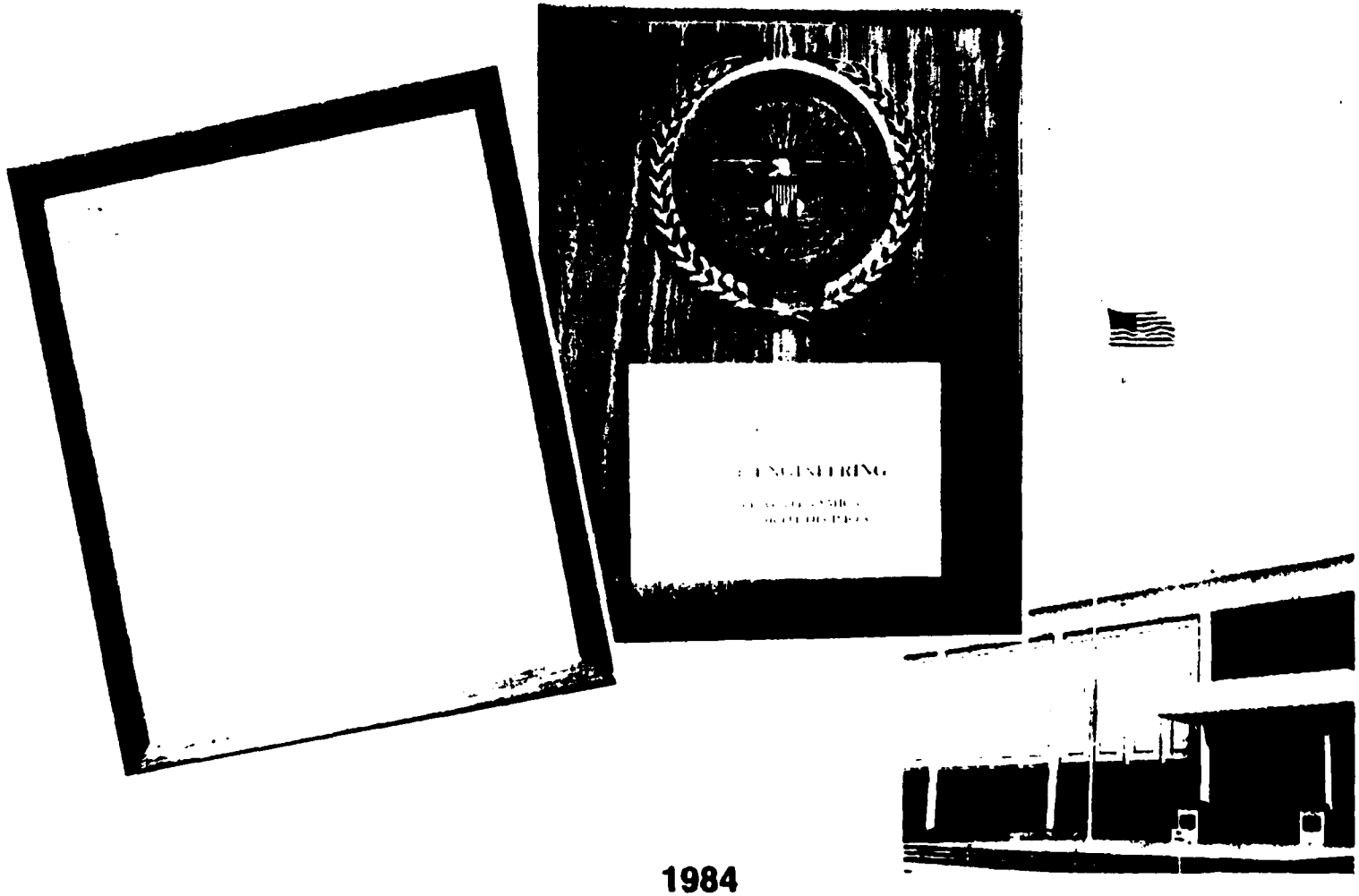
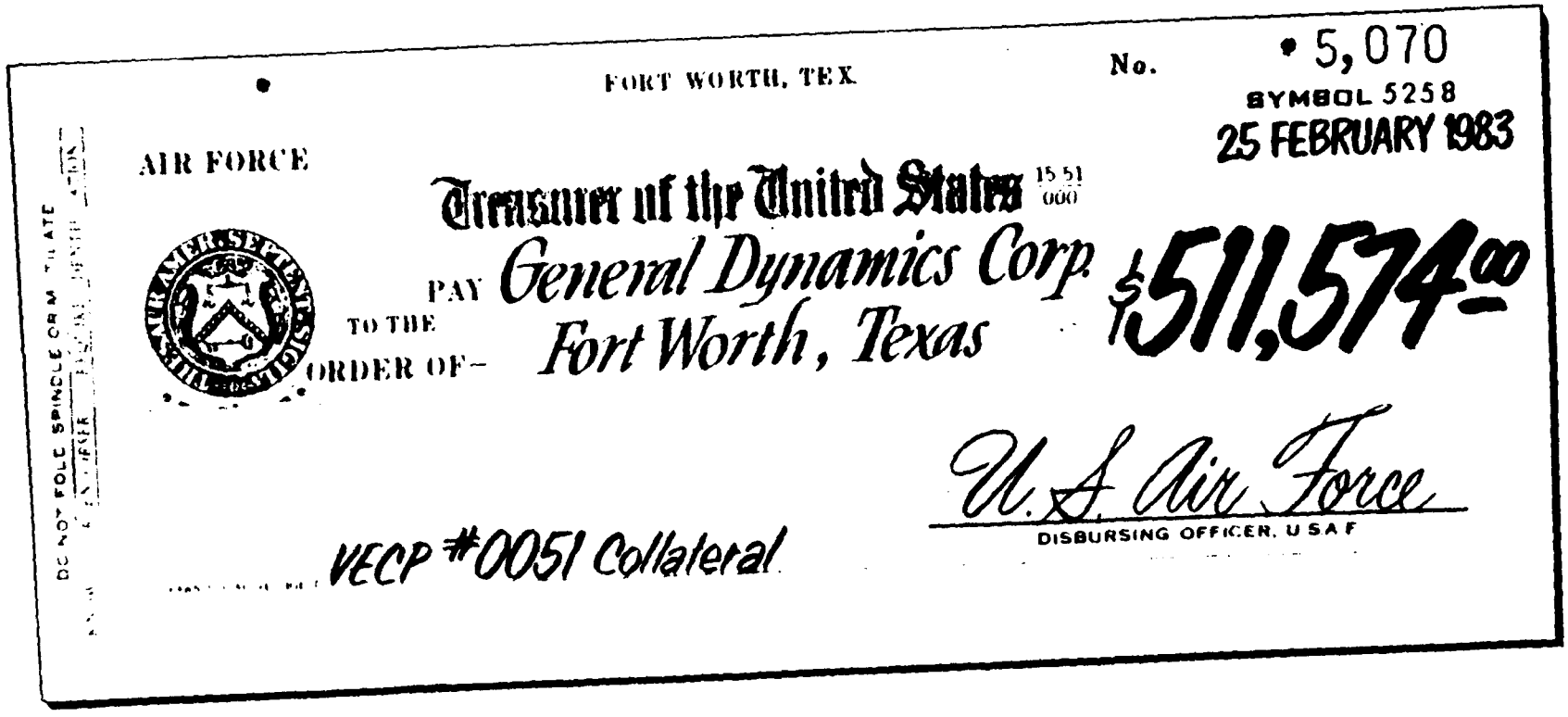
Customer Recognition Comes in Many Forms (Cont'd)



1984

Air Force Recipient of Department of Defense
Contractor Value Engineering Achievement Award for FY 1983

Customer Recognition Comes in Many Forms (Cont'd)



FORT WORTH, TEX.

No. • 5,070

SYMBOL 5258

25 FEBRUARY 1983

AIR FORCE

Treasurer of the United States 15 51 000

PAY General Dynamics Corp.

TO THE ORDER OF– Fort Worth, Texas

$511,574⁰⁰

U.S. Air Force

DISBURSING OFFICER, USAF

VECP #0051 Collateral

DO NOT FOLD SPINDLE OR MUTILATE

A60348

The Purpose of This Presentation

From a Contractor's (With a Very Successful Value Engineering Program) Viewpoint and Removing All Existing Constraints:

Where (What) Do You Perceive the Opportunities To Be Which Would Help Maximize the Returns to the Department of Defense's Value Engineering Program . . . ?

A60349

Incentivizing/Enhancing the DoD Value Engineering Program

- **A Pervasive DoD/VE Policy**
- **Create the Value State of Mind**
- **Expand the VE Technique to Other Procurement Elements**
- **Optimize the Windows of Opportunity**
- **Institute Some Procedural Changes**

A60350

A Pervasive DoD Value Engineering Policy

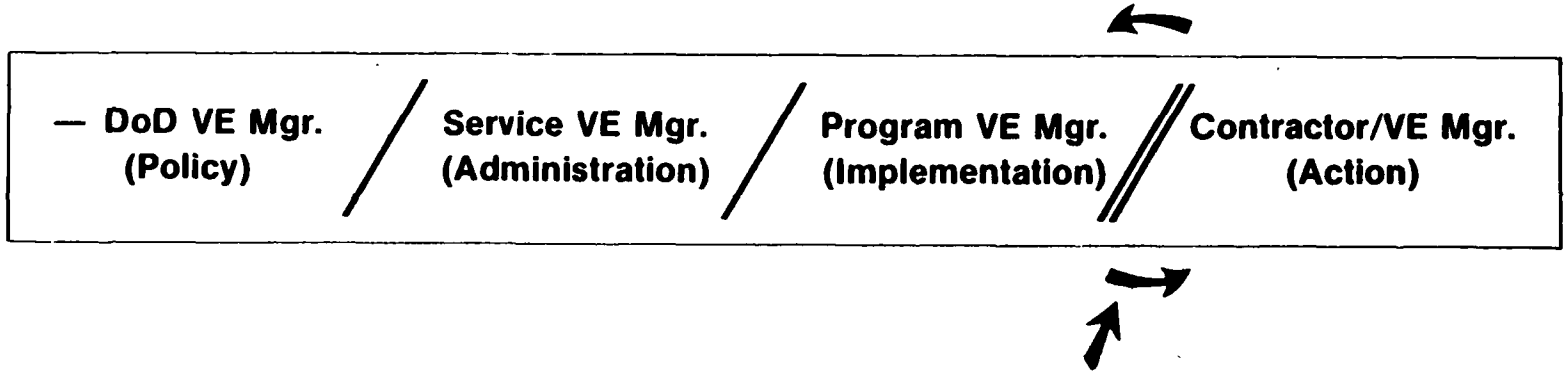
- **Review All Three Services' VE Programs and:**
  - **Transfuse the Best From Each**
  - **Drive for Consistent Emphasis**

	FY 84 % Procurement TOA	*Service VE Mgr GS Level*	*Full Time Value Engineers*	*FY 83 VECPs Received*	*First 6 Mos FY 84 VECPs Received*
Army	20.4%	15	61	923	430
Navy	36.9%	14	14	205	93
Air Force	41.3%	13	8	109	68

A60351

A Pervasive DoD Value Engineering Policy (Cont'd)

- **Provide Continuity**



A60352

Create the Value State of Mind

- **Cost Reduction Ideas and VECPs Require Creation and Review in a Receptive Climate**

— Create:	Good for The Program	Good for The Company	Good for Me
— Review:	Good for The Program	Good for The Government	Good for Me

A60353

Create the Value State of Mind

- **Industry Approach: *Thou Shalt Memos Won't Do It . . .* Must be a State of Mind That Says *"Thou Shalt Not Do Otherwise"***
  - ***Multiple Programs:*** *Cost Reduction/Employee Suggestion/Value Engineering/Quality Circles/Conservation/Productivity Improvement*
  - ***Multiple Goals:*** *Cost Reduction/Employee Suggestion/Value Engineering/Productivity*
  - ***Competition:*** *Individual/Organizational/Division*
  - ***Feedback:*** *Rewards/Recognition/Performance Appraisal Records*

- **Recommended Additions to Internal DoD System**
  - **Establish Goals for: Processing Time; Number of VECPs; as Well as $ Saved**
  - **Provide Feedback for DoD & Service Personnel: Appropriate Recognition; Rewards; Performance Recording**

When the Mind Set is Complete:
Cost Reduction Ideas Occur Even at Night!

A54672A

Expansion of VE Technique to Other Procurement Elements

- **Major Production Program - VE Incentive Clauses Adequate**

But -

- **Support Equipment Not Adequately Covered**
  - **VE Is Usually Not Incentivized/Required on "Small Procurement Quantities" Such as Support Equipment**

- **Quantities and Testing Excluded**
  - **Large Potential for $ Savings - (Spares Quantities/Testing Procedures)**
  - **Sometimes Used for VE Rejection - Many Changes Involve "Quantity"**

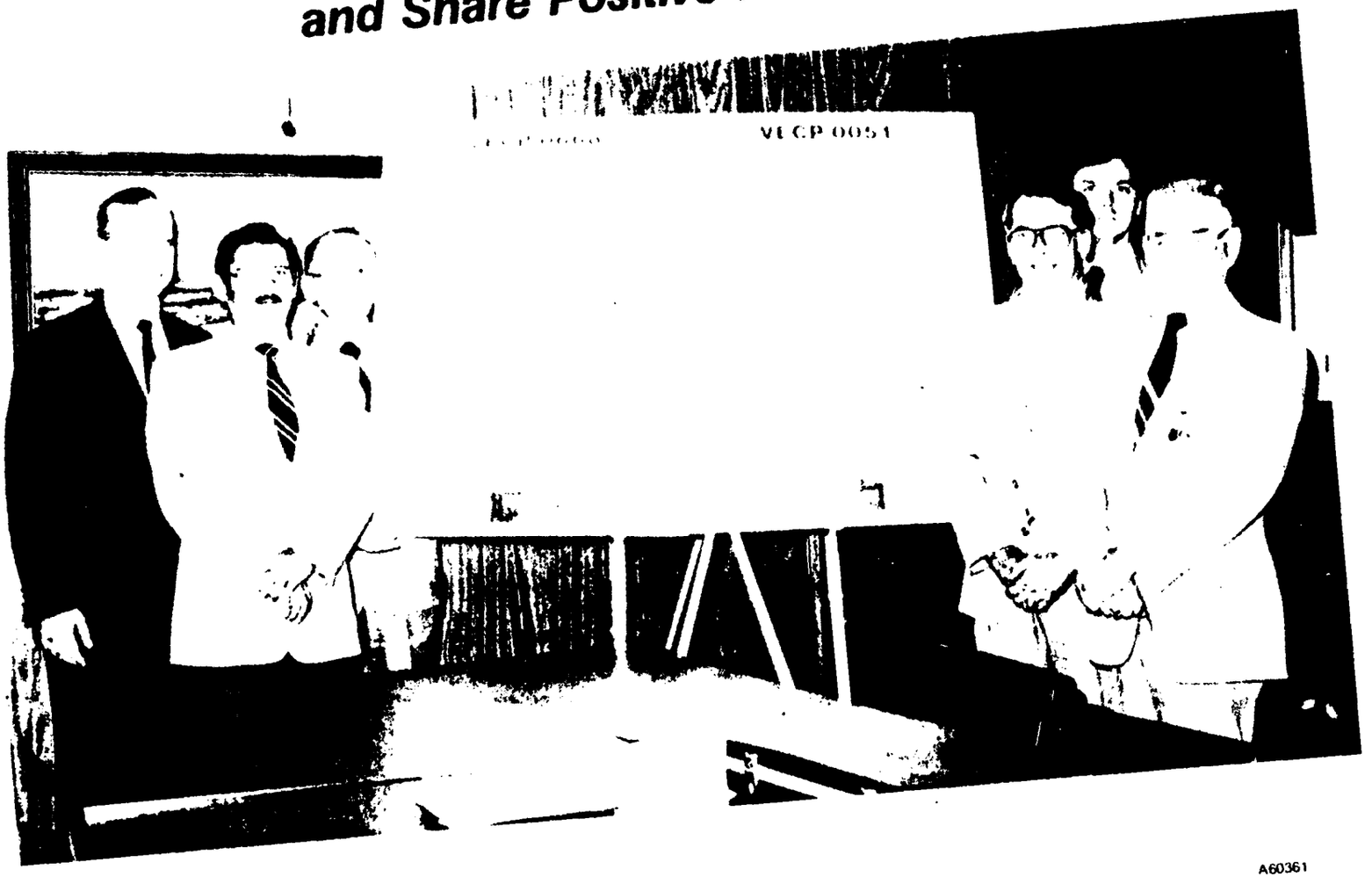
A60354

Institute Some Procedural Changes:

- **Improve the Incentive Arrangements on Government/Prime/Subcontractor VECP**
  - **Subcontractor Shares 1/3, or at Incentive Line (Whichever Is Greater)**
  - **Government and Prime Share Balance Equally**
- **Improve Approval/Authorization Process/Timing**
  - **Mil Std 480: $100K VECPs Are Urgent: Process in 15 Days**
  - **Presently: Submittal to Authorization: 6 Mos. to One Year +**
  - **Retain Service VE/PM Control Log; Report to DoD When VECP Is Over 90 Days Old**
  - **Consider: Approve & Authorize Now - Negotiate later (If There Is Agreement That Costs Are Reduced)**
  - **Copy of Rejection Letters to Service VE Manager's Office**
- **Uniform Procedures for Auditing Cost Reduction/VE Program**
  - **Establish a Meaningful Purpose**
  - **Auditors Familiar With Techniques and Purpose of Program**
  - **Share Positive Findings Among Contractors**

A60355

Establish Uniform Audit Procedures . . . and Share Positive Findings!



A60361

Optimize the Windows of Opportunity

- **DoD/Service/Contractor (Subcontractors) VE Opportunities**
  - **For Every Major Program: There Are Windows of VE Opportunity (I.E., Prior to Functional Configuration Audit/Physical Configuration Audit; Conclusion of Interim Operational Test and Evaluation; Etc.)**
  - **Conduct Joint "No Holds Barred" VE Sessions**
  - **Sharing of Savings: 50/50 on All Changes (Class I and II) Negotiate Royalty/Collateral Provisions**

A60356

DoD's Value Engineering Program . . .

- **Can Carry Six Elk . . .**
- **Has a Potential of Billions in Life Cycle Savings . . .**
- **Requires "Us" to Provide the Appropriate Horsepower . . .**

"Us" Defined . . .

- **The Department of Defense : Policy . . . Motivation . . .**
- **DoD Components : Implementation . . . Encouragement . . .**
- **Contractors/Subcontractors : Creation . . . Development . . .**

A60357

SLIDE 5 NOTE:
- 50% DO NOT FEEL VE CONTRIBUTED TO PROFITABILITY
- 2 VECPs PER CONTRACT ON AVERAGE.

ADDITIONAL TELLING OBSERVATIONS BY SURVEY RESPONDENTS ARE PROVIDED IN ADDENDUM (SLIDES 14, 15, 16)

SLIDE 6 BOTH PRIME AND SUBCONTRACTOR EXPERIENCE IS THAT MANY EXPRESSIONS OF SOPHISTRY (AND IGNORANCE) ARE USED TO REJECT VECPs -

ADVERSITY, TO EXHAUSTION, IS MUCH TOO COMMON.

SLIDE 7 SEVERAL SUPPLIERS SAID THE PROJECT OFFICE (SEE ADDENDUM) IS THE HARDEST TO GET TO SUPPORT VE. THIS IS MARKEDLY SO WHEN THE INSTANT CONTRACT REQUIRES NEW FUNDS TO GET DOWNSTREAM SAVINGS.

SLIDE 8 FOR VE TO COMPETE FOR A CONTRACTOR'S RESOURCES -

$ FUNDS TIME PEOPLE -

IT MUST IMPROVE ITS IMAGE, MEET ITS FUNCTION.

SLIDE 9 THREE (3) IMPROVEMENTS TO THE VE PROCESS STAND OUT:

RECEPTIVITY: VECP'S MUST BE ANATHEMA TO SOMEONE - EITHER THE PROJECT OFFICE, PROCUREMENT PEOPLE, LEGAL BEAGLES, OR CONTROLLER - OR ALL OF THE ABOVE. (FOR FAMOUS VE REJECTIONS, SEE ADDENDUM, SLIDES 12, 13)

CRITERION: THE USUAL POLEMIC GOES:

- IS THE CONTRACTOR FREE TO MAKE THE CHANGE WITHOUT (NECESSARILY) CHANGING THE CONTRACT?
- IF YES, IT IS NOT A VECP!

THE CONTRACTOR IS ALSO FREE TO NOT MAKE THAT CHANGE.

- HE IS NOT COMPELLED TO REDUCE COST
- HE IS FREE TO SELL HIS RIGHTS - AS A VECP.

SUMMARY OF MARTIN MARIETTA VE PRESENTATION

"VE - A TOOL THAT BENEFITS LINE MANAGEMENT."

(IT IS TIME TO VALUE ENGINEER, VALUE ENGINEERING)

SLIDE 1 MARTIN MARIETTA ORLANDO AEROSPACE HAS A BROAD EXPERIENCE BASE, INCLUDING VALUE ENGINEERING, AS A PRIME AND SUBCONTRACTOR WITH VARIOUS ARMY, NAVY, AIR FORCE AND INDUSTRIAL CUSTOMERS. WE ALSO CONDUCTED A VE SURVEY OF 25 SUPPLIERS THAT REPRESENT 23% OF OUR SUBCONTRACT EXPENDITURES.

SLIDE 2 VE ACTUALS IN 1984 AND FIRM COMMITMENTS FOR 1985 DEMONSTRATE SIGNIFICANT INVESTMENT AND ACTIVITY. SUCH AN INVESTMENT ALWAYS PROMPTS THE QUESTION: WHAT RETURN ON INVESTMENT WILL IT YIELD? TO ANSWER THAT, WE NEED TO EXAMINE THE TRACK RECORDS.

SLIDE 3 A CURSORY OVERVIEW OF BUYERS WHO HAVE AIRED THEIR RESULTS - INCLUDING MARTIN MARIETTA ORLANDO AEROSPACE AS PRIME - SHOWS THAT VE COST REDUCTION LEAVES MUCH TO BE DESIRED. NO ONE CAN BE IMPRESSED WITH THE TRACK RECORD. WHAT DO SUBCONTRACTORS THINK OF VE.

SLIDE 4 SUBCONTRACTORS SEEM TO SAY:

- WE ARE PARTICIPATING - IT TAKES FOREVER TO PROCESS.
- THE PRIME MAKES IT DIFFICULT OR UNREWARDING.
- THE GOVERNMENT PROJECT OFFICE RESENTS AND RESISTS.
- IS IT WORTH THE EFFORT? ("PAIN IN THE POSTERIOR.")

DoD VALUE ENGINEERING CONFERENCE

(1-2 November 1984)

Point:

"VE - a tool that benefits line management."

Counterpoint:

It is time to Value Engineer

- Value Engineering.

DoD
VALUE ENGINEERING
CONFERENCE

1-2 November 1984

Martin Marietta
Orlando Aerospace
Presentation

By

Frank Angiulli
Contracts Director

GENERAL DYNAMICS
Fort Worth Division
P. O. Box 748, Fort Worth, Texas 76101

JOHN D. JACKSON

Biographical Sketch

Mr. J. D. (John) Jackson manages the Value Control; Conservation; Management/Procurement Improvement; and Employee Suggestion Programs at the Fort Worth Division of General Dynamics. Previous to this assignment his responsibilities included the Design to Cost; Cost Control; Configuration Management and Planning Functions for such diverse projects as the Advanced Fighter Technology Integrator; Advanced Metallic and Composite Program; Robotics; and Adhesive Fuel Tank Sealant Program.

Currently serving on the Society of American Value Engineer's Executive Board as Vice President Finance/Controller, Mr. Jackson is also General Dynamics' representative to the Electronic Industry Association's Value Management group.

Mr. Jackson is a Certified Value Specialist (CVS) with twenty five years experience in the Cost Reduction/Value Engineering disciplines. He holds a BS degree in Engineering and a Master's degree in Business Administration. He has served on the faculties of Texas Christian University and Tarrant County Junior College, where he taught courses in Management, Finance, Mathematics, and Psychology. He has authored numerous publications, and represented General Dynamics as a business consultant to community education projects.

The recipient of the AFCMD Cost Reduction Award, Mr. Jackson in consonance with the USAF and ASD Value Engineering offices has conducted forty hour Value Engineering Workshops at the Air Force Institute of Technology. He recently served as co-chairman of an ASD session at their September conference.

Mr. Jackson resides in Fort Worth, Texas where he and his wife, Deloris, raise Quarter horses and Brahman cattle.

# # #

October 1984

GRAPH #25 DoDs VALUE ENGINEERING PROGRAM

- o CAN CARRY SIX ELK
- o HAS POTENTIAL OF BILLIONS IN LIFE CYCLE SAVINGS
- o REQUIRES "US TO PROVIDE THE APPROPRIATE HORSEPOWER".
- o "US" IS DEFINED AS:

  DoD: POLICY & MOTIVATION

  DoD COMPENENTS: IMPLEMENTATION & ENCOURAGEMENT

  CONTRACTORS/SUBCONTRACTOR: CREATION & DEVELOPMENT

VUGRAPH # 22 THERE ARE SOME PROCEDURAL CHANGES THAT SHOULD BE INSTITUTED.

- o THE EXISTING INCENTIVE ARRANGEMENTS ON SUB-CONTRACTOR VECPs SHOULD BE MODIFIED TO PROVIDE A LARGER INCENTIVE ARRANGEMENT FOR THE SUB-CONTRACTOR.
- o THE PROCESSING TIMES FOR VECPs SHOULD BE REDUCED AND THE RATIONALE FOR SLOW PROCESSING MORE CLOSELY MONITORED AND CONTROLLED.
- o CONSIDERATION SHOULD BE GIVEN TO APPROVING AND AUTHORIZING THE CHANGE WITH NEGOTIATION TO FOLLOW WITHIN A REASONABLE TIME.
- o A CLOSER CONTROL SHOULD BE EXERCISED OVER THE RATIONALE FOR REJECTIONS. MANY IF NOT MOST OF THE REJECTION RATIONALES ARE NOT TECHNICAL IN NATURE. SUCH ISSUES AS AUTHORSHIP -- QUANTITY --ETC. DESERVE REVIEW BY A HIGHER AUTHORITY RATHER THAN INITIATING LETTER WRITING EPISODES TO OVERCOME REJECTION --
- o IF A COST REDUCTION/VALUE ENGINEERING PROGRAM MUST BE AUDITED -- IT SHOULD BE DONE WITH A MEANINGFUL PURPOSE BY PERSONNEL WHO UNDERSTAND THE METHODOLOGY/MOTIVATIONAL ASPECTS OF THE METHODOLOGIES.

- THEN THE POSITIVE FINDINGS SHOULD BE SHARED AMONG THE CONTRACTORS.

VUGRAPH #23 THE AUDITS SHOLD BE OF THE SAME TYPE THAT WERE CONDUCTED BY THE ASD TEAM HEADED BY MR. BILL LUCKA --

IN THAT MANNER THE CONTRACTOR'S MANAGEMENT THINKS POSITIVELY ABOUT THE PROGRAM -- IN LIEU OF SEEING IT AS ANOTHER SOURCE OF AUDIT AGGREVATION.

VUGRAPH #24 FINALLY...EVERY MAJOR PRODUCTION PROGRAM HAS WINDOWS OF OPPORTUNITY.

AT THESE TIMES "NO HOLDS BARRED" VE SESSIONS SHOULD BE CONDUCTED BY A JOINT CUSTOMER/CONTRACTOR TEAM.

THE TEAM WOULD CONSIST OF THE PEOPLE WHO KNOW -- FROM THE A/F SARGENT ON THE FLIGHT LINE TO THE DESIGNER OF THE SYSTEM(S) BEING STUDIED.

EVERY PIECE OF HARDWARE & REPORTING REQUIREMENT WOULD BE FAIR GAME FOR APPLICATION OF VALUE ENGINEERING.

THE SAVINGS WOULD THEN BE SHARED THROUGH THE PRE-ESTABLISHED AGREEMENT.

VUGRAPH #19 IN OTHER WORDS A VALUE STATE OF MIND MUST BE CREATED --

IN REVIEWING THE CHANGE PACKAGES THE DECISION MAKER MUST RECOGNIZE THAT THE VECP DOES NOT DETRACT FROM AVAILABLE TIME HE COULD SPEND ON ASSIGNMENTS AGAINST WHICH HIS PERFORMANCE IS RATED.

HE MUST ALSO UNDERSTAND THE MOTIVATIONAL BENEFITS OF VECPS.

MANY TIMES YOU HEAR THE PHRASE ---"BUT THAT IS WHAT WE PAID YOU FOR" WHY SHOULD YOU SHARE IN THE SAVINGS.

THE REVIEWER MUST BELIEVE THE PROGRAM IS GOOD FOR THE GOVT. AS WELL AS HIMSELF.

VUGRAPH #20 AT THE FORT WORTH DIVISION OUR MANAGEMENT BELIEVES VERY STRONGLY IN CREATING A "STATE OF MIND". THOU SHALT MEMOS WON'T DO THE JOB.

MULTIPLE PROGRAMS UTILIZING THE MECHANICS OF GOALS - FEEDBACK TO THE GOALS -- AND COMPETITION ASSURES THAT COST IS A PARAMOUNT FACTOR IN EVERY DECISION PROCESS.

INTERESTING ENOUGH, SOME OF OUR BEST COST REDUCTION IDEAS HAVE OCCURED TO OUR EMPLOYEES AS A RESULT OF THE FACT THAT THOUGHT PROCESSES CONTINUE IN THE MIDDLE OF THE NIGHT ---

THE SAME "MIND SET" CAN BE ACHIEVED WITH THE USE OF GOALS FOR THE DoD PROGRAMS. THESE GOALS SHOULD INCLUDE NUMBERS OF VECPs; $ TO BE SAVED; PROCESSING TIMES ETC.

EQUALLY IMPORTANT TO THE GOALS IS THE FEEDBACK MECHANISM SO THAT APPROPRIATE RECOGNITION AND REWARDS ARE PROVIDED FOR MEETING AND EXCEEDING THE OBJECTIVES.

VUGRAPH #21 ANOTHER AREA OF OPPORTUNITY LIES IN EXPANSION OF THE VE TECHNIQUE.

WHILE MAJOR PRODUCTION PROGRAMS HAVE BEEN INCENTIVIZED -- THE SMALL PROCUREMENT QUANTITIES (SUCH AS IS REQUIRED BY FIELD SUPPORT EQUIPMENT) HAS BEEN LEFT VIRTUALLY UNTAPPED.

ALSO THE FAR SPECIFICALLY EXCLUDES THE SUBJECTS OF "QUANTITY CHANGES" & "TESTING" FROM BEING THE SUBJECT OF VECPs.

BOTH AREAS OFFER GREAT OPPORTUNITIES FOR SAVINGS AND SHOULD BE THE SUBJECT OF VE ATTENTION

THEY ALSO OFFER THE OPPORTUNITY FOR AN EXCUSE FOR REJECTION BECAUSE EVERY CHANGE INVOLVES A MEASURE OF QUANTITY IN SOME FORM.

VUGRAPH #17 MY FATHER USED TO CONTINUALLY REMIND ME THAT: "THE GREATEST OPPORTUNITY FOR YOUR IMPROVEMENT ALWAYS COMES FROM WITHIN."

THERE ARE "GOODS" (AND LESS THAN GOODS) WHICH ARE PECULIAR TO EACH OF THE VE PROGRAMS OF THE VARIOUS SERVICES. THAT INFORMATION IS PRETTY MUCH PUBLIC KNOWLEDGE AMONG THE VE COMMUNITY.

SOME OF THE INFORMATION TRANSLATES INTO A LEVEL OF INTEREST ON THE PART OF THE CUSTOMER -- AND SINCE CONTRACTORS TRY TO PRESENT A MIRROR IMAGE TO THEIR CUSTOMER'S WANTS AND DESIRES --CONTRACTORS ALLOCATE ASSETS TO THE PROGRAM ACCORDINGLY.

THEREFORE: A REVIEW OF THE SERVICES' VE PROGRAMS SHOULD BE CONDUCTED ... TRANSFUSE THE BEST FROM EACH...AND DRIVE FOR A CONSISTENT EMPHASIS ON THE PROGRAM...POSSIBLY IN RELATION TO THE ALLOCATED TOTAL OBLIGATION AUTHORIZATION.

VUGRAPH #18 CONTINUING WITH THE THEME OF "PERVASIVENESS IN THE PROGRAM" IT CAN BE OBSERVED THAT DoD POLICY IS CREATED. Ms. GILLEECE AND MESSRS. BIDWELL AND FRANK (THROUGH FAR REVISIONS, PRESENTATIONS, LITERATURE, SOCIETY MEETINGS, ETC.) KEEP THE CONTRACTORS APPRISED OF THAT POLICY.

WE CAN ALSO OBSERVE THAT THROUGH VARIOUS DIRECTIVES, LETTERS, ETC. THE POLICY IS PASSED THROUGH (ADMINISTERED TO) MANAGERIAL LEVELS BELOW THE VARIOUS SERVICE HEADQUARTERS.

BEYOND THIS POINT, THE QUESTION OF "WHO IS RESPONSIBLE" IS OFTEN THE PARAMOUNT ISSUE. IF THE CONTRACTOR'S VALUE ENGINEERING TEAM HAS AN IDEA THAT PERTAINS TO A VECP WHO DO THEY CONTACT?

THE PROCURRING OFFICER?

PROBABLY LOGICAL BUT ALSO USUALLY ONE OF THE BUSIEST PERSONS IN THE CUSTOMER'S ORGANIZATION. A RESPONSIBLE INDIVIDUAL SHOULD BE IDENTIFIED IN EACH ORGANIZATION AND A CATALOGUE OF NAMES PROVIDED TO INTERESTED CONTRACTORS.

IN CONSONANCE WITH THE ASSIGNMENT OF HANDLING THE VALUE ENGINEERING PROGRAM THERE MUST ALSO COME A FORM OF RECOGNITION FOR SUCCESS (AND FAILURES) IN THE HANDLING OF THAT ASSIGNMENT. IT MUST BE AN INHERENT PART OF THE PERFORMANCE MEASUREMENT PACKAGE, ELSE IT WILL BE RELEGATED TO A "LEISURE TIME ACTIVITY" STATUS.

VUGRAPH #14 AND OF COURSE...CUSTOMER RECOGNITION CAN COME IN THE FORM OF MONETARY AWARDS...

THIS CHECK FOR OVER 1/2 MILLION REPRESENTED OUR AWARD FOR A $ 39 MILLION DOLLAR COLLATERAL VECP.

IN OTHER WORDS --- BY ALL EXISTING STANDARDS WE COULD SAY, THAT GD/FWD HAS A RECOGNIZED OUTSTANDING VE PROGRAM ---

VUGRAPH #15 BACK TO THE PURPOSE OF THIS PRESENTATION ---

WHERE (WHAT) DO WE PERCEIVE THE OPPORTUNITIES TO BE WHICH WOULD HELP MAXIMIZE THE ROI TO THE DoD VALUE ENGINEERING PROGRAM ---

TO GET THE ELK OUT OF THE VALLEY IF YOU PLEASE...

VUGRAPH #16 WE BELIEVE THAT THERE ARE AT LEAST FIVE AREAS FOR INCENTIVIZING/ENHANCING THE PROGRAM, NAMELY:

- A PERVASIVE DoD POLICY
- CREATION OF THE VALUE STATE OF MIND
- EXPANSION OF THE VE TECHNIQUES
- OPTIMIZING THE WINDOWS OF OPPORTUNITY
- INSTITUTING SOME PROCEDURAL CHANGES

VUGRAPH #7 AS WE WILL DISCUSS LATER A "VALUE STATE OF MIND" IS EXTREMELY IMPORTANT FOR A SUCCESSFUL VE PROGRAM.

OUR CUSTOMER HELPS ENCOURAGE THAT ENVIRONMENT THOUGH SUCH ACTIVITIES AS THE ASD SEMINAR WHERE WE JOINTLY LOOKED AT IMPROVING THE VALUE OF SOME OF OUR F-16 COMPONENTS.

VUGRAPH #8 OUR CUSTOMER ALSO ENCOURAGES THROUGH PARTICIPATION IN THE GENERAL DYNAMICS' VALUE ENGINEERING WORKSHOPS. OUR AFPRO CHIEF OF ENGINEERING PROVIDES THE OPENING REMARKS AND WE ALWAYS HAVE SEVERAL CUSTOMER PERSONNEL IN OUR CLASSES. MR. BARBIERI IS A GRADUATE OF ONE OF THE CLASSES AND THE NEW ASD/VALUE ENGINEER- MR. CLEVELAND HAS INDICATED HE WOULD LIKE TO ATTEND THE SPRING WORKSHOP.

VUGRAPH #9 THE AIR FORCE HAS USED OUR VECPs AS BEING REPRESENTATIVE OF THEIR PROGRAM'S EFFORTS AT VARIOUS SHOWINGS.

VUGRAPH #10 IN 1983 THE FORT WORTH DIVISION WAS PRESENTED THE A/F VALUE ENGINEERING CONTRACTOR OF THE YEAR AWARD.

VUGRAPH #11 AND THE RECOGNITION WAS SHARED WITH OUR F-16 SPO PROGRAM MANAGER AT THE TIME -- GENERAL MONAHAN.

WHICH INCIDENTALLY IS A VERY GOOD IDEA ---BECAUSE IT REALLY TAKES BOTH THE CONTRACTOR AND THE CUSTOMER TO MAKE THE PROGRAM SUCCESSFUL ---

VUGRAPH #12 IN 1984 THE FORT WORTH DIVISON WAS AWARDED.

THE DoD PENNANT FOR OUTSTANDING VE ACHIEVEMENT....

VUGRAPH #13 ....AND PLACQUE FOR THE DOD/AF VALUE ENGINEERING CONTRACTOR OF THE YEAR....

IN THE LITTLE INSET YOU CAN SEE THE PENNANT FLYING IN FRONT OF THE AIR FORCE PLANT #4.

VUGRAPH #5 IT IS NO WONDER THAT WITH THAT TYPE TRAINING IT IS SO DIFFICULT TO ACCEPT A VALID VALUE ENGINEERING CHANGE PROPOSAL (VECP).

HOW CAN SOMETHING BE "NEW & IMPROVED" AND STILL COST LESS??

I RECENTLY CO-CHAIRED ONE SEGMENT OF AN ASD/VALUE ENGINEERING WORKSHOP AT WRIGHT-PATTERSON AIR FORCE BASE. ONE THING CAME OVER LOUD AND CLEAR...

IN THE ENVIRONMENT WHICH WE ALL EXIST ....

IT IS RELATIVELY EASY TO SPEND MONEY.....

IT IS VERY DIFFICULT TO ACCEPT IT BACK!!!!

MAYBE IT IS JUST OUR INHERENT TRAINING WHICH SAYS " YOU ONLY GET WHAT YOU PAY FOR". HOW COULD VALUE ENGINEERING PROVIDE IMPROVEMENT TO THE "ILITIES" AND ALSO REDUCE COST?

IT MAY SEEM THAT WE ARE INVOLVED WITH AN UNNATURAL PHENOMENA.

I'VE BEEN INVOLVED WITH IT FOR A QUARTER OF A CENTURY.

IT DOES WORK!!!

HOPEFULLY THIS WORKSHOP WILL BETTER ENABLE ALL OF US TO UNDERSTAND WHY...

VUGRAPH #6 WHEN WE WERE ASKED TO MAKE THIS PRESENTATION THE REQUEST WAS FRAMED ABOUND A SITUATION WHEREBY: "IF ALL RESTRAINTS COULD BE REMOVED WHAT WOULD YOU PERCEIVE TO BE THE OPPORTUNITIES WHICH COULD MAXIMIZE DoD'S RETURN FROM THE VALUE ENGINEERING PROGRAM?

BEFORE WE GET INTO THAT ASPECT OF THE PRESENTATION --- I WOULD LIKE TO CREATE A SCENARIO OF THE ENVIRONMENT FROM WHICH THE THOUGHTS IN THE PRESENTATION EMANATE --

FIRST LET ME STATE THAT SINCE INCEPTION OF THE F-16 PROGRAM ALMOST 90% OF THE VECPs SENT TO THAT SPO HAVE BEEN APPROVED...

NOW I WOULD LIKE TO GO RAPIDLY THROUGH A SERIES OF VU-GRAPHS WHICH CREATE FOR YOU A VISUAL PICTURE OF OUR PROGRAM....

VUGRAPH #3 JUST AS LOGICALLY THE ANSWER WOULD BE "BECAUSE IT WORKS."

DATA FROM A 1984 SURVEY CONDUCTED BY THE SOCIETY OF AMERICAN VALUE ENGINEERS (AND WHICH WILL BE RELEASED LATER THIS YEAR) REVEALED THAT:

- OF THE FIRMS SURVEYED: TWENTY FOUR RESPONDED; 19 OF WHOM HAD VIABLE VALUE ENGINEERING PROGRAMS WITH FORMAL VALUE ENGINEERING WORKSHOPS.
- THE AVERAGE ANNUAL EXPENDITURE FOR THESE PROGRAMS WAS $ 364,000.
- THE AVERAGE ANNUAL SAVINGS WAS $ 9,872,000.
- THAT IS A RETURN ON INVESTMENT OF 27/1.

VUGRAPH #4 AN ROI OF 27/1 IS NOT BAD FOR A MANAGEMENT METHODOLOGY WHICH ADVERTISES AS A MAJOR SELLING POINT THAT:

> "FUNCTIONAL EVALUATION IS INTERESTED IN IMPROVING THE VALUE OF THE PRODUCT AND IS NOT NECESSARILY AIMED AT COST REDUCTION PER SE."
>
> QUALITY, RELIABILITY, MAINTAINABILITY, SALABILITY, ETC.-- ARE OF PRIMARY IMPORTANCE IN A VALUE ANALYSIS.

ONE MORE ILLUSTRATIVE ANTEDOTE BEFORE WE ARRIVED AT THE SERIOUS PART OF THE PRESENTATION.

TWO YOUNG BROTHERS WERE HELPING THEIR MOTHER GROCERY SHOP IN A SUPER MARKET.

THEY HAD BEEN SENT ON A MISSION TO FIND SOME SOAP. ON THE WAY THEY WERE DISTRACTED BY THE ICE CREAM, COOKIE, AND CANDY COUNTERS IN JUST ABOUT THAT ORDER.

WHEN THEY ARRIVED AT THE SOAP COUNTERS THEY COULDN'T REMEMBER THE BRAND THEY WERE SUPPOSED TO BUY.

"CAN YOU TELL BY LOOKING AT THE WRAPPER?" ASK THE YOUNGER BROTHER. "IF SO HERE'S ONE THAT SAYS NEW...IMPROVED!!!"

"NAW" THE OLDER BROTHER REPLIED WITH INFINITE WISDOM THAT COMES WITH BEING THE OLDER BROTHER, "THAT ONLY MEANS IT COSTS MORE."

ONE OF WILL ROGERS FAMOUS QUOTES WAS: "MONEY AND WOMEN ARE THE MOST SOUGHT AFTER, AND LEAST KNOWN ABOUT,OF ANY TWO THINGS WE HAVE!"

THIS IS THE THIRD TIME I'VE HAD THE PRIVILEGE OF HEARING MS. GILLEECE SPEAK ON THE SUBJECT OF ECONOMICS AS THEY RELATE TO WEAPON SYSTEMS DEVELOPMENT AND PROCUREMENT. I'M SURE (AS WILL STATED) MS. GILLEECE HAS HER AREAS OF MYSTIQUE BUT THERE IS CERTAINLY NO QUESTION ABOUT WHERE SHE STANDS WITH RESPECT TO RECEIVING MAXIMUM VALUE IN RETURN FOR EXPENDITURE OF DoD FUNDS.

IT IS INDEED AN EXTREME PRIVILEGE TO FOLLOW HER TO THIS PODIUM TODAY.

VU-GRAPH #1 OPPORTUNITIES

VU-GRAPH #2 VALUE ENGINEERING IS NOT A PANACEA!!!

IT IS NOT ---AS SOME MIGHT PROFESS--A CURE-ALL FOR ALL FINANCIAL AND PERFORMANCE ILLS ---

HOWEVER...PROPERLY APPLIED, IT IS AN EXCELLENT MANAGEMENT TOOL FOR ASSURING THAT YOU RECEIVE MAXIMUM VALUE FOR EACH $ SPENT...

BUT JUST SAYING THE WORDS WILL NOT CAUSE IT TO HAPPEN....

I'M REMINDED OF THE HUNTERS WHO BAGGED SIX ELK IN REMOTE CANADA. THEIR PILOT TOLD THEM THE PLANE COULD ONLY CARRY FOUR...

"BUT THE PLANE WHICH CARRIED US OUT LAST YEAR WAS THE SAME MAKE; SAME SIZE; SAME ENGINE; THE WEATHER WAS SIMILAR; AND WE HAD SIX ELK THEN."

HEARING THIS THE PILOT RELUCTANTLY AGREED TO LOAD THE SIX ELK.

SURE ENOUGH THERE WAS INSUFFICIENT POWER TO CLIMB OUT OF THE VALLEY AND THEY CRASHED. AS THEY STUMBLED FROM THE WRECKAGE ONE HUNTER ASKED THE OTHER IF HE KNEW WHERE THEY WERE.

"WELL I'M NOT SURE BUT I THINK WE'RE ABOUT TWO MILES FROM WHERE WE CRASHED LAST YEAR."

OBVIOUSLY, THE MORAL TO THIS STORY MIGHT BE "RECITING THE WORDS DOESN'T NECESSARILY EQUATE TO A SUCCESSFUL MISSION -- THE PROPER TOOLS ARE ALSO REQUIRED!!!"

AS MOST OF YOU KNOW WE'VE CRASHED THE DoD/VE PROGRAM A TIME OR TWO...

LOGICALLY THEN IF WE'VE HAD PROBLEMS BEFORE WE MIGHT ASK: WHY EVEN BOTHER WITH THE VALUE ENGINEERING DISCIPLINE??"

(SLIDE 9 CONT)

SUBCONTRACTOR: THE SUB'S PROBLEMS ARE SEVERAL:

- SHARING
  - PRIME WANTS 50%
  - PRIME GETS 50% OF NOTHING
  - OFTEN SHARES IN ONLY THE INSTANT CONTRACT - NO COLLATERAL, CONCURRENT
  - DAR/FAR BEING MODIFIED (TO PRIME'S FAVOR).
- PRIVITY
  - RARE IS THE SUB CHANGE THAT CAUSES, IN TURN, A CHANGE TO THE PRIME (SEE FREE TO CHANGE ABOVE, AND TDP BELOW).
- NON-TDP CHANGES:
  - SUPPLIERS ARE SPENDING OVER 50% OF COST TO THE GOVERNMENT
  - THE "CHANGE" CRITERION MUST BE DEFINED, INTERPRETED, OR CHANGED TO GET TO THE SUPPLIER LEVEL OF DETAIL.

SLIDE 10 THIS IS A NON-TDP CHANGE. IT REDUCES COST BY CUTTING LIMITED ENVIRONMENTAL TEST (LET) IN HALF.

CAPITAL $ AND PEOPLE RESOURCES ARE NEEDED FOR A LARGER TEST CHAMBER, AND A MORE MODERN COMPUTER CARD IN THE TEST CONSOLE (PLUS 4-SEEKER FIXTURE/CONTRACT COST AND 4-SEEKER SOFTWARE/CONTRACT COST).

SLIDE 11 SHOWS THAT CONTRACTOR WILL HAVE CERTIFIED PROPOSALS TWICE:

- BETWEEN CONCEPTION AND ON-LINE PRODUCTION
- CERTIFICATION (OR DEFECTIVE PRICING) MEANS
- ROI = MINUS $500K, KONSTANT DOLLARS.

MARTIN MARIETTA ORLANDO AEROSPACE

Experience Base:

- Prime Contractor
- Subcontractor
- Supplier Survey

Customers - Such As:

- MICOM
- AVSCOM
- ARRADCOM
- NAVAER
- NAVSEA
- Raytheon
- ASD
- ESD
- McAIR

Slide 1

VE INVESTMENT

$ Invested in 1984:

- 7-person VE SWAT team
- $600K SWAT team budget (salary and seed money)
- 162 persons trained in 10 VE workshops
- 32 Subcontract persons in VE workshops
- 4 in-house seminars and special training shops

Output:

19 VECPs (zero (0) contractually authorized)

VE TRACK RECORD

Source	Spent ($ B)	Time (Yrs)	VECP Recd	VECP Appvd	Program Saving ($ M)	Savings Per VECP ($ K)
Air Force (Recon Warfare)	1	2	7	4	0.355	89
Army (AMC)	17 (Obligations)	1	-	708	53.000	75
Army (Other)	-	1	-	215	1.000	5
Martin Marietta (Orlando Aerospace)	0.5	2	1	1	0.014	14

SUMMARY OF VENDOR SURVEY

(By Martin Marietta Orlando Aerospace)

<u>Scope:</u>

- 25 vendors = 23% of subcontract $
- 17 respondents

<u>General Impression:</u>

- Pain in the posterior
- Output ≠ input

VENDOR SURVEY DATA

- 88% have participated in VE
- 75% have formal VE policies and procedures
- 69% have a VE focal person or group
- * 50% do not feel VE contributed to profitability
- 13% have employee VE incentives
- 2% of contract value in VE savings
- * 1.9% VECPs per contract average

VOICES OF VE REJECTION

General:

- Why pay a contractor more profit to fix his dumb design ?
- What's novel about that change ?
- That's an apparent fix !
- That's not a technical change !
- You're FREE to make that change (without contract change).
- That's below the specification/TDP requirements.
- DTUPC overrides VE.

Subcontractors Say:

"Educate the project people, not the VE people !"

SAMPLE RECEPTIVITY

"We're not much interested in VECPs with negative instant contract savings." (Project Office)

For that program there is pending one VECP that offers $116.9M

• Contractor implementation costs (including $400K of contractor risk investment)	$1.4M	
• Other Government implementation costs	$0.0M	
Subtotal	$1.4M	
• Contractor's share (including collateral) during 3-year sharing window	$4.0M	
Total	$5.4M	
• Government's savings share during 3-year sharing window (200% of investment)		$2.8M
• Government's savings share for planned production (7,960% of investment)		$108.7M
Total		$111.5M

THE NEED:
VALUE ENGINEER, VALUE ENGINEERING

Primary Function:

- Reduce cost

Secondary Function:

- Reduce cost

Tertiary Function:

- Reduce cost

Analysis:

- VE IS NOT MEETING ITS FUNCTION.

VE EXPLOITATION - FIXES NEEDED

<u>Receptivity:</u>

- Environment
- Interpretation
- Timeliness
- Attitude
- Administration

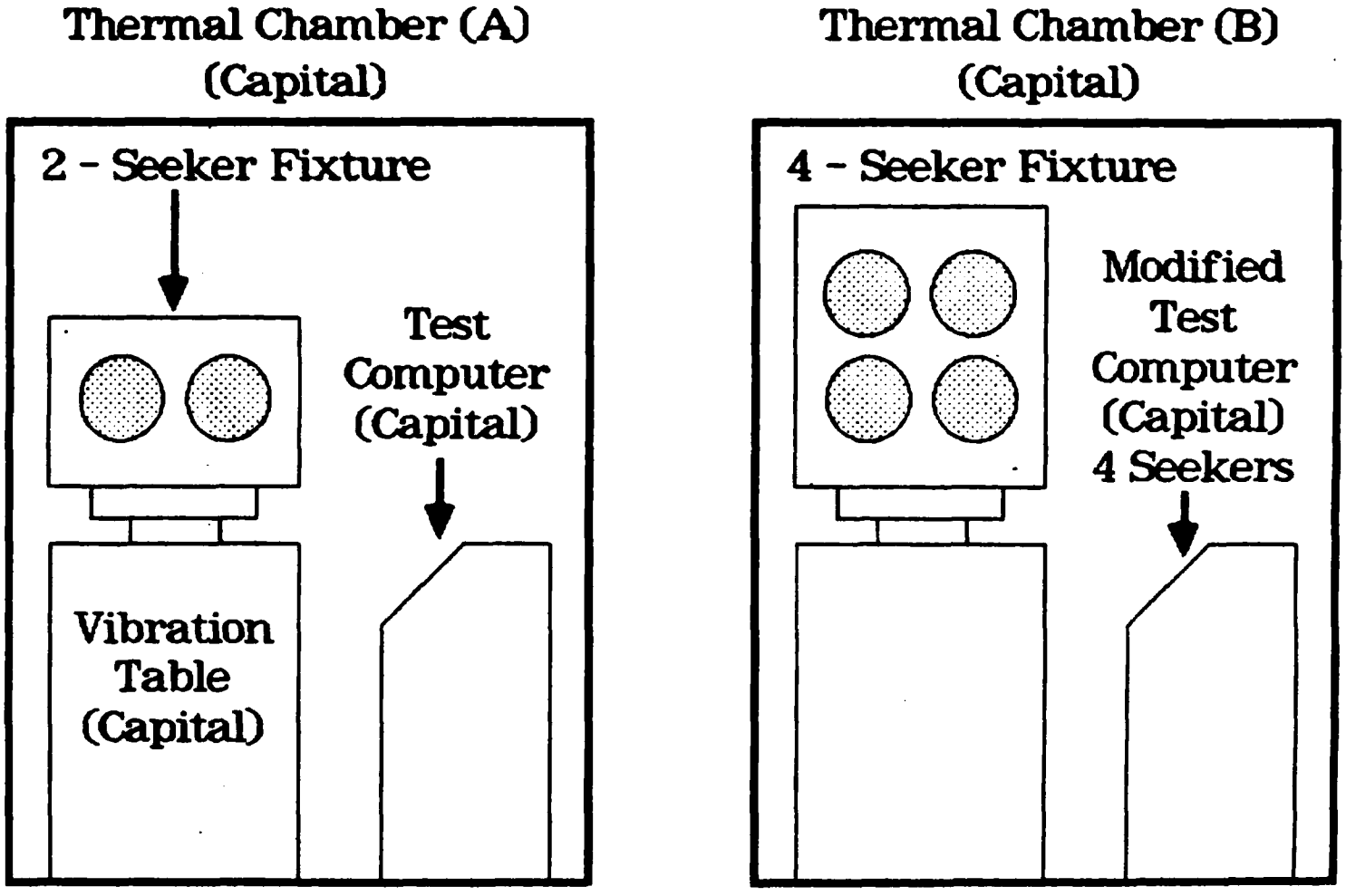
<u>Criterion:</u>

- "... requires a change to the contract _____ TO IMPLEMENT."
- Non-TDP changes

<u>Subcontractor:</u>

- Sharing ratios
- Non-TDP changes
- Prime as surrogate (future, collateral, concurrent)

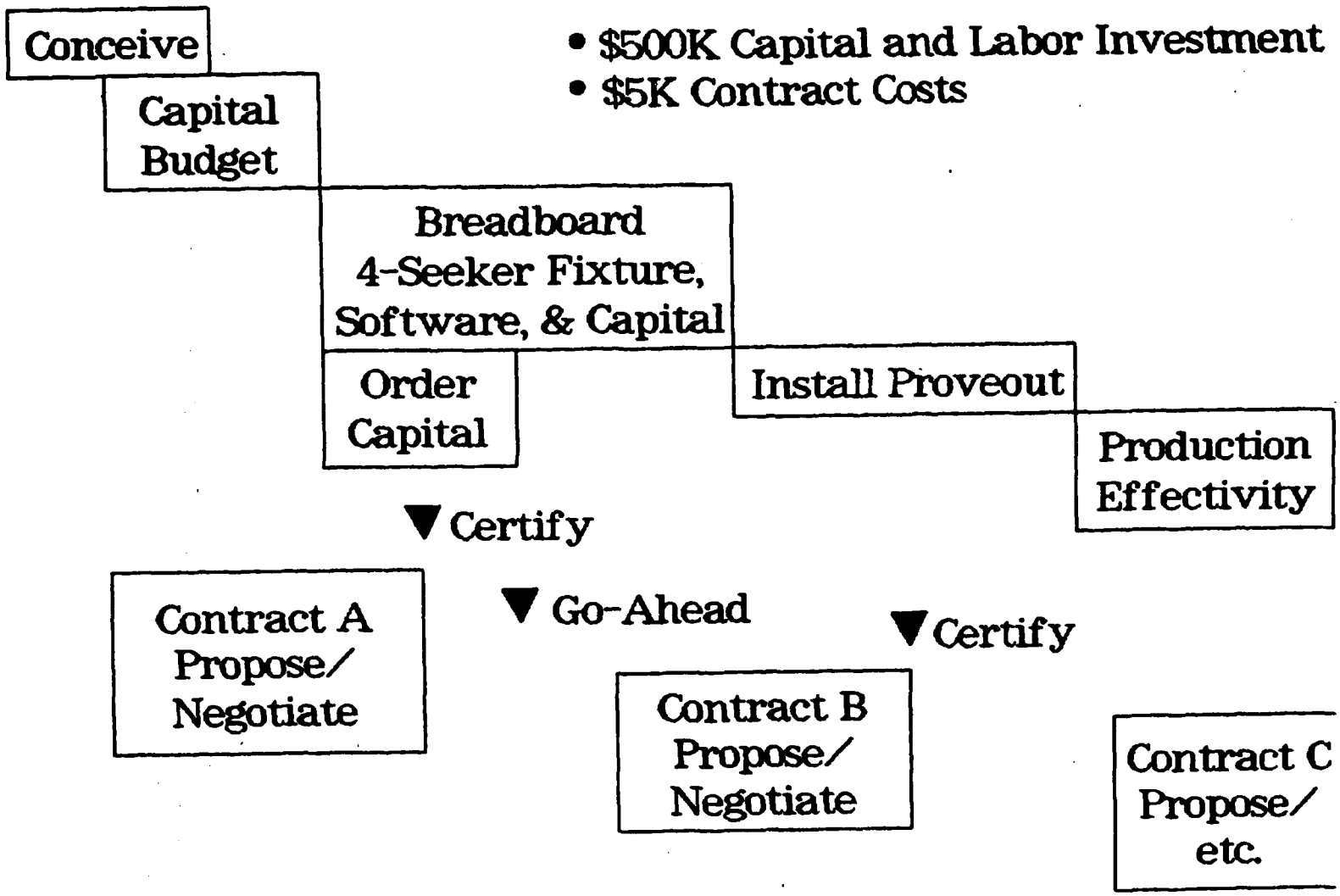
EXAMPLE: NON-TDP CHANGE



Slide 10

TIMELINE: NON-TDP CHANGE

Recoupment Issue



Slide 11

ADDENDUM

Famous Rejections

Previous Rejections

A

- TDP is contractually baselined.
- TDP states: "... 2-inch (nominal) dielectric wafer.
- VECP said: "Change 2-inch to 3-inch."
- Rejection (and final decision) said:
  - "... the change is not necessary to permit the use of a 3-inch wafer."
  - "The phrase '2-inch nominal' means in name only."

B

- TDP is contractually baselined.
- TDP contains a source control drawing (SCD).
- SCD states: "Purchase only from Able Company."
- Contractor develops and qualifies a new source, Baker Company.
- VECP said: "Add: 'Also buy from Baker Company.'"
- Rejection said: "Change of a source is not a VECP."

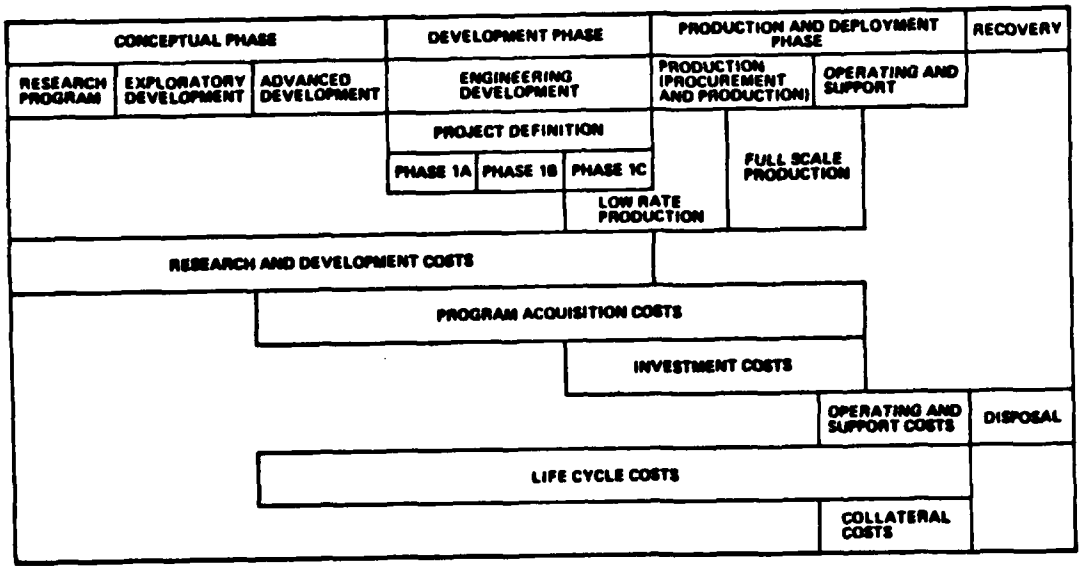
Slide 12

This guy knocked at the Pearly Gate.
His face was scarred and old.
He stood before that man of fate.
For admission to the fold.
"What have you done," the Angel asked,
"To gain admission here?"
"I've been a hard working value engineer
For many and many a year."
The pearly gates swung open wide.
The Angel touched the bell.
"Come in and choose your harp," he said
"You've had your share of hell!"

Before any discussions can start about collateral, or describe it or define it, I first have to talk about the life cycle of a system. I'm not going to give a class on the life cycle, but I do want to say a few things about it. It is the total funds required to acquire and utilize a specific function. The contractor is equal to the total expenditures of the product (that's overhead, G&A and fee). The Government is equal to the total cost of acquisition and ownership. It's all of those costs incident to research, development, production, operation, and maintenance.

For discussion purposes, I have broken the life cycle into three phases. The first phase is the conceptual phase, then the development phase, and finally the production and deployment phase. When talking to different services about the life cycle, especially when I was working proposals, one week i'd be working with the Navy, and the next week the Army, and the next week the Air Force; and each service has their own terms. I came up with a chart that tries to tie it all

THE LIFE CYCLE OF A SYSTEM



These next two charts go over benefits to the contractor and government, I'm not going to read them The thing that really is important that is on both charts is that VE keeps the program sold. It really does do that.

As you can see, we've done some pretty remarkable things at Hughes. I'm pretty proud to be the current corporate manager of value engineering. Since 1964, we have had 675 value engineering change proposals accepted by Hughes' customers, over 50 programs in all Services, with a total negotiated savings of six hundred and eleven million dollars. That's three percent of our HAC/DoD sales. Our customer return on investment has been between nine and ten to one. That's the end of the first part of my talk, I would now like to move into collateral savings.

What to do about collateral? Gordon asked me if I would spend some time and talk about collateral. This has been a going battle of mine for quite a number of years. In 1975, I took on the job of being the Don Quixote of collateral, and since that time I've been attacking the collateral "windmill" every chance I get, I have really felt like Don Quixote. Anyway, I have given a talk on collateral a number of times. However, today's talk is geared to you people right here.

When I first started being the champion of collateral, I found it to be really an area difficult to talk about. As most of you know, value engineering is difficult to talk about, collateral is even worse, even when talking to value engineering people. So a number of years ago I made up a little poem that describes the value engineer:

HOW COLLATERAL RELATES TO LIFE

BENEFITS TO THE GOVERNMENT

- REDUCE COST COMMITMENTS
- PROVIDE FUNDS FOR NEEDED CHANGES
- PERMIT TECHNOLOGY UPGRADE
- ENHANCE PRODUCT CAPABILITY
- REDUCE COST OF OPERATION AND SUPPORT
- ELIMINATE NON-COST EFFECTIVE REQUIREMENTS
- KEEP PROGRAM SOLD

BENEFITS TO THE CONTRACTOR

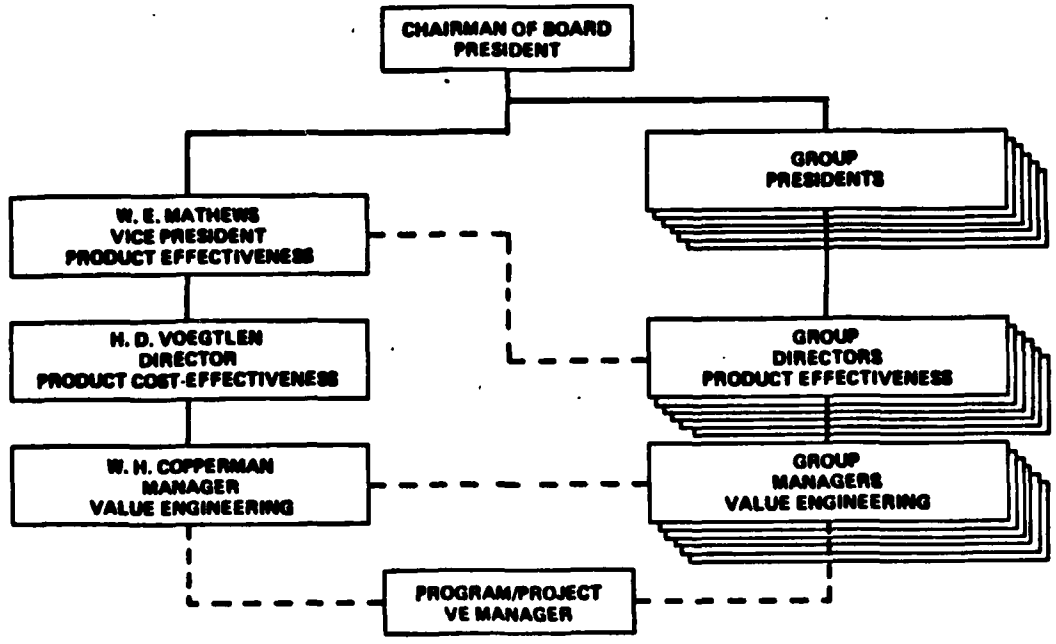
- RAISE EARNINGS
- INCORPORATE NEW TECHNOLOGY
- INCREASE PRODUCTIVITY
- ENHANCE COMPETITIVE POSITION
- IMPROVE QUALITY, RELIABILITY AND PRODUCIBILITY
- DELETE UNNECESSARY/COSTLY REQUIREMENTS
- EXPAND MARKET POTENTIAL
- REDUCE OVERRUN
- INCREASE CASH FLOW
- KEEP PROGRAM SOLD

Government's class. The third level covers program cost reduction task teams which are called upon by various program managers to work a particular project. Lastly, we have the VE workshop, which I might add is one of the few industry SAVE certified workshops. I said lastly because that's what we've had at Hughes up until a year ago. When we started emphasizing subcontractor VE activity. We VE'd the VE workshop and came up with a streamline workshop in methodology and contractual aspects and through this month (October) we have been on the road almost consistently covering fifteen suppliers throughout the country. Plus we are still doing our own in-house workshops. Before this year, we never had a supplier workshop. The question I ask myself is, "What's the return on the investment of my time and the people who have helped us?" One of the things that I require is that when I go to a supplier, the Hughes buyer will be there as part of the team as well as the Hughes responsible engineer. I may have two or three Hughes people as part of the supplier team and as of about a week ago we've trained 227 people. To date, we have had 19 teams with 19 proposals, every team has come up with a proposal. The last workshop had six suppliers participate at one time. The last day of the workshop the teams get up make their presentations and the first team got up and the spokesman made his presentation and told what the savings were, and it was a very nice savings. The second team leader got up, who happened to be the CEO of the Company and shocked everybody by saying, "I am not going to tell you anything at all about what we did these last two and a half days. The reason is my lawyers are now downtown preparing a patent on what we came up with." And he says, "With my competition sitting over here, you're not getting any information right now." But, three team presentations later, the competitor got up and said, "I'm going to tell you the results of mine, but it just so happens that our lawyers are also downtown preparing a patent." We had two patents coming out of this workshop. Of the nineteen proposals submitted, two have been approved for just a little over 2 million dollars. The potential from the nineteen teams is well over 20 million dollars. So the answer to my question is that the supplier activity is really paying off.

Some of the contributions toward VE made by Hughes over the years are: we have been an active supporter of EIA, Value Management Group, since its inception in 1965. I find this a very valuable organization. I would encourage any of the Government people who can make the EIA meetings to attend. They are very informative, with open communications between Government and Industry members. Gordon Frank has been very active for a long time and will give anybody any information about EIA who wants it. Hughes has participated in many bulletins and joint industry DoD initiatives. We've also been a corporate member of the Society of American Value Engineers since the inception of the society. In addition, we've been a leader throughout the country in both national symposia and assisted DoD organizations many times in VE briefings and training activities.

Some by-products at Hughes from VE activity is the class II change effort. The changes that are made that don't have to be turned in as VECPs in the past twenty-seven years, has amounted to four hundred million dollars. This is documented through our cost improvement program. I have no record of how much savings we've accrued by reducing overall life cycle costs in the logistics support and operation and maintenance areas, but the amount would be staggering.

THE ORGANIZATION AT HUGHES AIRCRAFT COMPANY



VALUE ENGINEERING HIGHLIGHTS 1964 — DECEMBER 31, 1983

675	VALUE ENGINEERING CHANGE PROPOSALS ACCEPTED BY HUGHES CUSTOMERS
50	PROGRAMS PARTICIPATED
$611.4	MILLION SAVINGS NEGOTIATED
3%	OF HUGHES DoD SALES
$492.8	MILLION CUSTOMER SHARE OF SAVINGS
$116.3	MILLION HUGHES SHARE OF SAVINGS
$2.3	MILLION SUBCONTRACTOR SAVINGS
$53.1	MILLION INVESTMENT TO GENERATE VECPS
9.3 TO 1	CUSTOMER RETURN ON INVESTMENT

WILLIAM COPPERMAN:

Mr. Frank:

The next speaker is Dr. William Copperman, Bill is the Corporate Value Engineering Manager for the Hughes Aircraft Company. Would you please welcome him.

W. Copperman

Thank you, Gordon. Good morning ladies and gentlemen. I am very pleased to be the fourth speaker in an audience like this. When you are fourth you are usually concerned with what the others are going to say. I'm pleased really, because what the other speakers did was to preface what I'm going to say, this morning.
About a year ago, I started using a Vu Graph, which seemed appropriate coming from California. "There's gold in them there hills." If you think of this old miner as the contract VE clause than the way that you achieve the gold in them there hills is through value engineering.

What I'm going to cover this morning will be in a trilogy. I first want to cover the Hughes Aircraft Company. I'm pretty proud of the value engineering record at Hughes. Some of you may be aware of it. Probably most of you are not and I would like to spend a few minutes covering our history. Secondly, I want to discuss collateral savings. And lastly, I want to cover other concerns that we have at the Hughes Aircraft Company.

We started almost 28 years ago in value engineering at Hughes with our first workshop in 1957. We responded to the first VE contract clause in 1969, and have received a considerable number of awards since; from the Society of American Value Engineers for contributions toward the enhancement of VE in 1978; from DARCOM the award eight consecutive years for outstanding achievement in Value Engineering and last year we received the first Department of Defense award to industry for outstanding achievements in value engineering.

The organization at Hughes shows complete dedication toward Value Engineering. I report to the Product-Cost Effectiveness Director who reports to the Vice President of Product Effectiveness who reports to the President. In each of the nine major groups, there is a group value engineering manager who reports to the Director of Product Effectiveness within that group. On each major program, we have assigned a value engineering manager. Many are fully dedicated. Where they are not fully dedicated there is someone that you can say, "He is the VE guy."

One of our great strengths at Hughes is our training, we have four levels of training within the company. The first level is briefings to Corporate Executives, major organization heads and major program managers. These briefings are one hour or less. We next have a four hour Contractual Aspects of Value Engineering (CAVE) class which is pretty much patterned after the

OUTLINE OF PRESENTATION

* AN OVERVIEW OF VE AT THE HUGHES AIRCRAFT COMPANY
  - HISTORY
  - ORGANIZATION
  - TRAINING
  - CONTRIBUTIONS
  - BY-PRODUCTS
  - RESULTS

* WHAT TO DO ABOUT COLLATERAL SAVINGS
  - THE LIFE CYCLE
  - COLLATERAL DEFINED
  - THE PROBLEM
  - A RECOMMENDED SOLUTION
  - WHAT DO YOU DO FIRST

* OTHER CONCERNS

THE HUGHES AIRCRAFT COMPANY APPROACH TO VALUE ENGINEERING

BIOGRAPHY

FRANK J. ANGIULLI

Representing 32 years in the Aerospace business as a project engineer for missile support equipment; Configuration and Data management; and Contracts management. He is currently the Contracts Director for Martin Marietta, Orlando Aerospace--a company of 10,000 people producing major missile, electro-optics and electronic systems for the Army, Navy and Air Force, and several foreign customers.

VENDOR SURVEY QUOTES AND SYNTHESIS

- "... establish funds to be used for development of VECP concepts. Contractors are almost required to risk the cost of development and demonstration in order to sell a VECP since contracting officers and program managers are unwilling to risk program obligated funds to develop unproven concepts."

- "With the new warranty clause imposed on all prime contractors beginning on March 14, 1984, in which performance must be warranted for X number of years, less consideration will be given to VECPs. Any change will be a new variable in projecting service life potential. Once a history of service life is demonstrated, changes will not be desirable unless they should eliminate a known weakness in the design."

VENDOR SURVEY QUOTES AND SYNTHESIS

- "Educate the project people, not the VE people."

- "Small value changes are welcome because they fill quotas; large value changes seem to embarrass the contract and project people."

- "In the FY '76 to '78 time frame, the Service was very supportive of VECP proposals. In contrast, a negative attitude toward VECPs was evident from FY '79 through '82. This change in attitude results primarily from government project managers not 'seeing' or receiving their share of VECP savings on contracts in which savings are shared with the contractor. He does, however, see the line item in contractor payments and tends to react negatively to new VE proposals."

- "It would take a considerable amount of good PR to remove the basic image of VECP - which is a pain in the posterior."

VENDOR SURVEY QUOTES AND SYNTHESIS

- Slow process time (2 to 36 months - 12 month average)
- Negotiations (with Government) "interminable"
- Instant contract sharing only (3 respondents)
- Improve subcontractor share - 50% of 50% is only 25%
- DAR/FAR tailored for sub (adversely)
- "Our most successful experiences have occurred as a prime contractor."
- "We have had a less than satisfying experience as a subcontractor to a prime corporate contractor."

ADDENDUM

Additional Responses - Subcontractor VE Survey

FAMOUS REJECTIONS (CONT)

C

- System specification is contractually baselined.
- System spec cites interface control drawing (ICD).
- ICD is also baselined in the subcontract.
- ICD specifies connectors - to assure 3-way compatability: Sub, Prime, GFP.
- VECP said: "Change connector from X to Y. . ."
- ICD modified accordingly for Sub, Prime, and GFP compatibility.
- Rejection said: "The change is below the specification detail. The contractor is free to make the change without a contract change."

together. I labeled the top of the chart conceptual phase, development phase, and production and deployment phase. Under these three phases, I than placed the Air Force, Navy, and Army nomenclature. I understand that the Army has just come up with a new set of definitions which are not shown here.

Anyway, the key point is that collateral costs/savings falls during the deployment period and can be anywhere from five, ten or even twenty years duration. The conceptual phase answers the question, "Is the system feasibly consistent with mission and performance objectives?" The second phase answers the question, "Are the conditional decisions made during the conceptual phase good enough to proceed, with a firm design?" The last phase is the one that satisfies the government requirements. So with three minutes of life cycle definitions I can now start with a discussion of collateral.

I've come up with a short and simple definition. Collateral is those savings that are generated through value engineering change proposals during the acquisition time frame which translates into savings in the operational time frame.

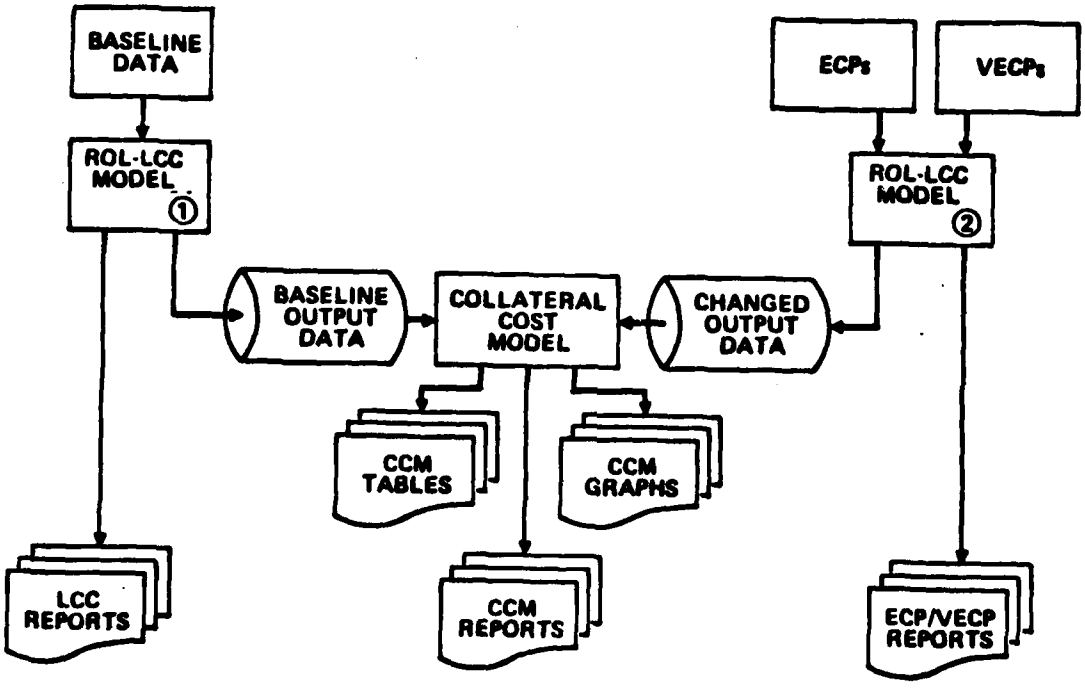
Why should the contractor pursue collateral? As most of you know, the pursuit of value engineering is a challenge by itself. Why therefore should we pursue something like collateral when there's little incentive to spend resources? Where there's little or no return on investment. I'm talking about return on investments to the contractor, and finally where there's little or no chance of a VECP being approved, why should a contractor waste time and effort on something that is <u>really</u> a waste of time?

What has created this problem? Most VECPs occur during the acquisition time frame and not during the operational time frame. A few weeks ago I was at Tinker Air Force Base Logistics Meeting where this subject was discussed. The problem is that most of the VE activity is directed toward those things which will change the acquisition hardware; not those things affecting operation time frame resources. Why? Because there's very little in it for the contractor to work on something that's out in the future, where he's going to get very little return on his time and effort. The other side of the coin (from the Government's side) is that the savings are in the future and a contracting officer has to look at an input from a contractor and wager his future on whether he's giving a contractor something that's based on, in most cases, crystal balling. You can't blame him for not being very receptive. Well, why does the problem continue? It continues because collateral is dead last on everybody's priority list; including value engineering people. There's no upfront programmed, budgeted operational dollars. Meaning that many times we'll come up with a potential VE that affects the operational time frame, but because there may be a requirement for expenditures of a lot of development dollars, the VE will be dropped. The Government doesn't have the money to support the contractor. It is not economically sound for the company to put up that money when all their going to get, in most cases, because there's usually no acquisition share, is 20 percent of one year. Besides the potential of getting approval is very risky. You can't blame the contracting officer in not accepting something from a contractor which in most cases is nothing more than a crystal ball or a pure guess. There's nothing to substantiate the PCO's file. There's nothing in the file to prove that he, the PCO, has given the contractor something that the contractor does not have coming to him. The burden of proof is clearly on the contractor alone. The efforts to come up with this proof are extensive and the rewards are very small. The result is total discouragement in the pursuit of collateral effort. I was surprised this morning

WHAT IS THE "LSAR"

- LOGISTIC AND SUPPORT ALTERNATIVES
- OPERATIONAL AND SUPPLY AVAILABILITY TIMES (BACK-ORDER WAITING TIMES)
- SPARES PROVISIONING
- PERSONNEL AND SKILL REQUIREMENTS
- USAGE FIGURES FOR SUPPORT EQUIPMENT
- SKILL CODE SPECIALITY MANHOUR FACTORS BY HARDWARE ITEM
- WAITS, STOCKAGE, LEVELS, AND THROWAWAYS
- EFFECT OF MEAN-TIME-TO-REPAIR (MTTR) CHARACTERISTICS
- EFFECT OF MEAN-TIME-BETWEEN FAILURE (MTBF) CHARACTERISTICS
- ETC

COLLATERAL COST MODEL



to see John Jackson's chart of five hundred thousand in collateral payments, I think that's fantastic. I don't know the details of it but I sure want to find out because those kinds of payments are very rare. We have had three collateral payments at Hughes in twenty-seven years, and it's not to say that we don't submit them, because we submit a collateral package with every VECP.

I came up with a recommended solution in 1977. There are four key areas which have to be looked at individually. A working relationship, has to be developed between the customer and contractor. A collateral cost model has to be developed, (I'll talk more about that in a minute). The collateral payments to the contractor must be based on payments on a per unit basis spread over a specific time period And finally, an increase in incentives to the contractors must be given.

Once you have developed a good working relationship the first thing is to develop a collateral cost model (CCM). The basis for a CCM is an acceptable LSAR as a primary data base. The LSAR for some of you who don't know is the Logistics Support Analysis Report which define the areas shown on this chart. You must also define the deployment and support structure. Many times it's very difficult, during the acquisition time frame, to clearly define what the deployment and support structure is going to be. What the levels of support are going to be, that is, what kind of depot, where the depots are going to be and how many. There's usually a lot of assumptions that have to be made early in the program.

The next thing that has to be determined, and which is not always clear, is how the inventory and spares requirements are going to be handled. That's something else that has to be ironed out with the program office.

Lastly, an agreement must be reached on how dollar calculations are made. I'm talking about whether you use then-year dollars, constant-dollars or now-dollars and what the escalation rates are going to be. All of these assumptions have to be ironed out before you can get started.

The collateral cost model was something that we developed with the Army on the US Roland program back in 1977. It is essentially a baseline data system which is made from the life cycle cost model and the inputs from the LSAR. Once the baseline date model was completed, a second model was developed. In the second model, we inputted all of the changes to the system as a result of any ECPs or VECPs. With this second model we were able to come up with a third model, which I call the collateral cost model (CCM). From the CCM, I can generate a lot of data and back up,
which reduces the crystal balling aspect and gives the PCO a detailed package that sometimes is an inch or two inches thick of data to prove what the collateral savings should be. I forgot to mention earlier that a full detailed discussion on this whole process can be found in a paper I gave a few years back at one of the conferences of the Society of American Value Engineers. It is printed in the 1983 SAVE Proceedings Volume 18 page 179-189.

The next aspect is how payments are to be made to contractors. They should be made on a per unit basis. You first must come to an agreement as to what the total program procurement will be. It does not have to be what the five year force plan says It may be less, it may be more, but it's something that you have to agree on. Next, you should negotiate a fixed amount of collateral savings that would be due to the contractor on the VECP, based on the current DAR/FAR regulations. It's that amount which would be paid up-front as collateral to the contractor as part of the instant contract payment. This is the amount which would be the twenty percent of an average year. It's this amount the contractors

usually don't get because the money isn't available from the program office resources. So the contracting officer disapproves the collateral savings share because he can't give something that he doesn't have.

However, once you have established the total collateral savings share you can then translate that into a fixed amount. You take the total potential number of procurements over the life of the program divided by the total collateral savings share to achieve a unit collateral savings (UCS). Once you have arrived at a UCS, you take this UCS (as you would a UCR) times the number of procurements on the instant contract to arrive at a collateral savings share for the instant contract. The balance of the collateral savings shares would be paid over concurrent or future contracts until the amount of money agreed to under total collateral savings share is reached. That way, you're spreading the payments due a contractor over a longer period of time which in most cases would allow the government the opportunity to pay the contractor his share of collateral.

What's in it for the government? As far as I know, the only way that the Government can reduce support costs effectively, is to have the contractors work in the areas where support costs are high and through collateral effort can achieve a savings. Where a reduction in replenishment spares can be made, where repair rate changes can be effected, and reductions in any of the other 60 or 70 areas I can list. This is in support areas where
you're affecting the operational time frame.

In conclusion, I would make the following five recommendations: What we have to do is to publicize collateral to the highest echelons of the government, through letters, bulletins, articles, and talks. I hope I'm doing that now. The second recommendation is to develop a computerized collateral cost model. This model should be developed, probably by OSD. One which each of the services can use as a guide, not necessarily use in total, but be able to modify it to their own requirements. One which each of the contractors throughout the country could also use as a guide. (A military standard would be ideal.) Third, we must establish a budget in the planning stages as part of every program. There has to be up front money available for contractors to allow them to work on studies which will achieve operational time frame savings. The problem which exists is that the Government Program Manager, whose working on today's problems, with today's budget constraints, isn't going to spend his budgeted money on something that's going to affect another program managers activities in the next commander's time frame. We must establish a budget in the planning stages so that monies are available for collateral studies.

Fourth, we must come up with better definitions. Some of the things that need to be defined are: "What's an average year?" An average year isn't a good incentivizer to the contractor. It should be a typical year. That's one definition. And what's a typical year? In most cases, your deployment build-up is in the first four years. A typical year doesn't start until maybe the fourth or fifth year. When you have a slow build-up rate and you take the average, you're including those four or five years of build-up. Whereas, a typical year would be the fifth year or the sixth year whenever the steady-state year starts. Finally, we have to incentivize the contractors with a higher share of savings. To do those activities which will effect the operational time frame.

The last part of my talk this morning covers other concerns of mine and the Hughes Aircraft Company. I am sure that they are also concerns to a lot of you

out there. The first one is to challenge the conference workshops into considering as part of the discussions, the lack of trained and motivated contracting officers. I've been a senior negotiator at Hughes for a lot of years and have done value engineering negotiations for well over ten of those years. It's embarrassing when time after time I am sitting across the table from the contracting officer who doesn't even know how to spell value engineering. It's very difficult to negotiate a VE contract change under those conditions. I feel that if a contracting officer is trained the mere fact that he understands value engineering is going to motivate him.

The second concern is the available funds up-front for VEs that have a large front end requirement. Something has to be done for this kind of activity. The Government is losing a lot of potential VEs. A lot of big VEs. Somebody said earlier today that you have to spend money to make money. But that front-end money has to come from somewhere.

The next concern is one which is really starting to bother a lot of people. It was a major topic at the Dayton Air Force VE conference The concern is the increase in multiple source contracts. There's no answer at present as to how to treat multiple source contractors. I think this is something that can stifle VE activity in the future, or it could possibly stimulate activity. It depends on how the government sees value engineering. It is something that needs to be handled real soon. There's more and more multiple source contracting occuring every month. I'm afraid that that could end a lot of VE activity unless a mutual system is worked out.

The last concern is one which I feel is very important. It's the broader use of the change notice to approve a technically feasible VECP. Waiting for a supplemental agreement is taking, as you know, as much as two years, or longer for approval. A recent case in point is the very successful Air Force Maverick VECP. This VECP negotiation was completed just a couple of weeks ago. Negotiations started sixteen months ago. If we would have waited until the VECP was negotiated and received the supplemental agreement, we would have lost well over five million dollars in savings and possibly lost the VE in total. The Air Force Contracting Officer gave us a change notice after the VECP was technically approved allowing us to make the change subject to contract negotiations. The total amount of those savings was $172.8 million.

Anyway, remember there is gold in them there hills.....
Thank you.

WILLIAM H. COPPERMAN, CVS, is the Value Engineering Manager of Hughes Aircraft Company in Los Angeles, California. He received a BS Degree from Duquesne University, a MBA Degree from the University of Southern California and a JD Degree from the University of San Fernando Valley, College of Law. He became a Certified Value Specialist (CVS) in 1983. Dr. Copperman has 30 years experience in engineering, manufacturing, contract negotiations, and proposal management. Before joining the Corporate Staff at Hughes, he spent eight years as the Manager of Value Engineering and Proposal Management on the Hughes U.S. Roland Program. During the past 10 years he has been an active participant in the Electronics Industries Association (EIA), Value Management Group where he is currently serving as Vice Chairman. In addition he is Vice President of Administration of the Society of American Value Engineers.

E-3A VALUE ENGINEERING

A
PRESENTATION TO ADPA
BY
BRIG GEN CHARLES P. CABELL, JR.
DEPUTY COMMANDER FOR AWACS

ELECTRONIC SYSTEMS DIVISION

OVERVIEW

- A FUNNY THING HAPPENED ON THE WAY TO THE CONFERENCE
- VE: "WIN/WIN" OR "BREAK EVEN/LOSE" ?
- SIX IDEAS FOR A BETTER DEAL
- STRATEGY TO ADVOCATE VALUE ENGINEERING (ESD SAVE)
- SUMMARY AND CONCLUSIONS

A FUNNY THING HAPPENED ON THE WAY TO THE CONFERENCE

A FUNNY THING HAPPENED

STARTED OUT BULLISH ...

- ESTIMATED TOTAL AWACS VE SAVING $80M
- BAC WINS DoD VE AWARD FOR 1983
- AWACS VE MONITOR GUS OESTERLE WINS AF VE ACHIEVEMENT AWARD FOR 1983

A FUNNY THING HAPPENED

... BUT ENDED UP BEARISH

- $80M REPRESENTS ONLY 13 VECPS OVER 12 YEAR PROGRAM LIFE
- $\frac{\$80M}{4.5B} < 2\%$
- NO ONE EXACTLY BREAKING DOWN DOORS TO GET IN
  - LAST VECP SUBMITTED MARCH 1983
- GAO REPORT CALLS FOR:
  1. "MANAGEMENT ATTENTION"
  2. "TELL CONTRACTORS HOW WONDERFUL VE IS"
  3. BUT SHOULDN'T A <u>REALLY</u> GOOD DEAL BE SELF-MOTIVATING? ...
- CONCLUSION: INCENTIVES ON BOTH SIDES MAY BE MORE APPARENT THAN REAL

VE: "WIN/WIN" OR "BREAK EVEN/LOSE"?

INCENTIVES ("WIN/WIN")

CONTRACTOR

- PROFIT
- CASH FLOW
- COMPETITIVE POSITION
- REPUTATION

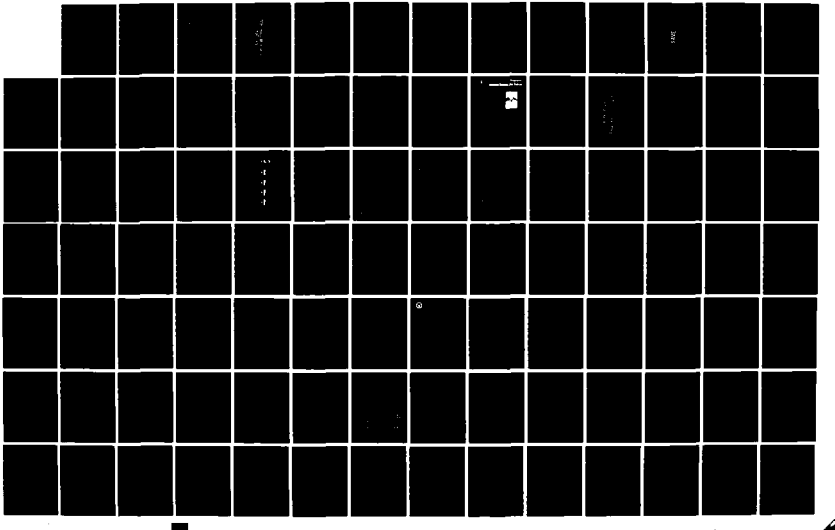
GOVERNMENT

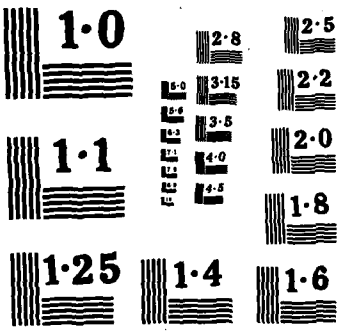
- COST SAVINGS
- QUALITY
- CAPABILITY

DISINCENTIVES "BREAK EVEN/LOSE"

CONTRACTOR

- PROFIT
  - INSUFFICIENT REWARD FOR PAIN
  - NO PROFIT ON IMPLEMENTATION COST
  - WRONG CONTRACT CREDIT
- CASH FLOW
  - INVEST NOW, GET PAID LATER
  - MUCH LATER WITH VE
- COMPETITIVE POSITION
  - MINUTE EFFECT FOR MOST
  - CAN'T AFFORD TO USE BEST PEOPLE
- REPUTATION
  - DELAYS INTOLERABLE





NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

DISINCENTIVES "BREAK EVEN/LOSE"

GOVERNMENT

- QUALITY
  - RISK OF GREMLINS
  - IF YOU COULD HAVE BUILT IT BETTER WHY DIDN'T YOU
- COST SAVINGS
  - HARD TO MEASURE, NEGOTIATE
  - UP FRONT INVESTMENT
  - GREED/CHICANERY PERCEPTIONS
- CAPABILITIES
  - ENHANCE VS FIX CHOICE

ASSERTIONS
(UNCONTAMINATED BY RIGOROUS ANALYSIS)*

- GIVEN A CHOICE, THE "SYSTEM" PREFERS THE FOLLOWING ORDER
  1. REGULAR ECP (ESPECIALLY URGENT)
  2. NO COST ECP (ESPECIALLY URGENT)
  3. VECP
- VECP OFTEN A "SOCIAL COST"
- THE DISINCENTIVES ARE THE MORE POWERFUL MOTIVATORS

* EVERYONE I TALKED TO AGREED, BUT I DIDN'T TALK TO EVERYONE, AND THE ONES I DID TALK TO COULD BE WRONG, BUT PROBABLY AREN'T

SIX IDEAS
FOR A BETTER DEAL

IDEA #1

SPEED UP THE VE PROCESS

- OUR AVERAGE IS 285 DAYS FROM PROPOSAL TO CONTRACTOR AWARD
- 4 - 6 MONTHS A REASONABLE GOAL
- TWO KEYS
  - BETTER PRICING PACKAGE (NOT ROM, NOT NTE!)
  - HIGHER PRIORITY

IDEA# 2

FIND A WAY TO TRANSFER FUNDS

- FRONT-END INVESTMENT REQUIREMENT KILLS MANY GOOD IDEAS, ESPECIALLY WHEN INVESTMENT BENEFITS SOMEONE ELSE
- MECHANISM NEEDED TO HAVE SOMEONE ELSE FUND INSTANT CONTRACT COSTS
  - BENEFICIARY (USER, AFLC, PRODUCTION)
  - INDUSTRIAL PREPAREDNESS FUNDS

(NOBODY SAID THIS WOULD BE EASY)

IDEA #3

MODELS NEEDED FOR ESTABLISHING LIFE-CYCLE SAVINGS

- RANGE FOR POTENTIAL DISAGREEMENTS TOO BROAD
- BETTER UP-FRONT GROUND RULES WOULD REDUCE NEGOTIATION TIME
- "SPREAD-SHEET" APPROACH TO HANDLE INNOVATIVE INPUTS
  EG: RETROFIT THRU ATTRITION)

IDEA #4

A SLIDING SCALE FOR SHARING

- WHERE YOU ARE IN ACQUISITION CYCLE MAKES A HUGE DIFFERENCE
- TODAY'S INCENTIVE MAY BE TOMORROW'S DISINCENTIVE
- COLLATERAL AREA PROBABLY NEEDS FLEXIBILITY MOST
  - 20% OF ONE YEAR'S SAVINGS TRANSLATES TO ABOUT 1% OVERALL
  - WORSE IF MUST SHARE WITH SUBCONTRACTORS
- SHARING SCALE SHOULD BE VARIABLE AND SENSITIVE TO:
  - RISK SHARING
  - INVESTMENT SHARING
  - OPPORTUNITY WINDOW

IDEA #5

TREAT LOW-VOLUME PRODUCTION PROGRAMS AS SPECIAL CASE

- FEW PROGRAMS END UP AT PLANNED RATE
- "3-YEAR" RULE FOR FUTURE ACQUISITION SAVINGS HURTS
- FAR DEVIATIONS REQUIRED
  - INCREASE CONTRACTOR SHARE
  - INCREASE SHARE PERIOD

IDEA #6

MORE MANAGEMENT ATTENTION ON BOTH SIDES

- TOO EASY MIS/OVER - INTERPRET VE PROVISIONS
- EARLIER COMMITTMENT/REJECTION
- NEED TO SIMULATE NEW IDEAS, APPROACHES
- IMPROVE FLOW TIMES
- USE TEAM APPROACH (REDUCE NOT INVENTED HERE SYNDROME)

SAVE

SAVE

- ESD RECOGNIZES THAT THERE ARE PROBLEMS
- ESD COMMANDER ESTABLISHED A STRATEGY TO ADVOCATE VALUE ENGINEERING TO:
  1. PROVIDE EMPHASIS AND IMPETUS
  2. VISIT CONTRACTORS TO IDENTIFY INHIBITORS
  3. CHANGE WHAT CAN BE CHANGED
  4. MOTIVATE PROGRAM MANAGERS
- BOTTOM LINE:
  - IF IT SAVES MONEY "DO IT"

SUMMARY

VALUE ANALYSIS IS AN EFFECTIVE TOOL
BUT
BUSINESS ARRANGEMENTS NEED IMPROVEMENT

- SIMPLIFY THE PROCESS
- MAKE IT PROFITABLE FOR THE CONTRACTOR TO INVEST
- PROVIDE MORE FLEXIBILITY TO PMs TO REACH SMART WIN/WIN DEALS

- Prior to 1979
  - — FMC pursued various limited independent VECP activities. Success ratios were not impressive

- 1979
  - — Performed a formal value engineering study on the Bradley Fighting Vehicle Program under the guidance of George Fridholm Associates

Topics

FMC

- History
- FMC statistics
- Organization and process flow
- Common questions
- Summary

(41-21-84)

FMC

Communication +

Cooperation = Team

FMC

FMC Value Engineering Program

28-10-86

In 1978 he was assigned to the Electronic Systems Division at Hanscom AFB, where he functioned variously as deputy director for the Base and Installations Security Systems Program, director of Iranian Air Defense Program, director for the Combat Information Systems Directorate, and assistant deputy for Communications and Information Systems.

He went to Systems Command's Aeronautical Systems Division at Wright-Patterson AFB in 1981, serving as deputy for Reconnaissance/Strike and Electronic Warfare Systems. In 1982 he became commander of the Air Force Wright Aeronautical Laboratories at Wright-Patterson AFB. He assumed his present position in March, 1983.

General Cabell is a command pilot with 3500 flying hours. Among his awards and decorations are included the Legion of Merit with one oak leaf cluster, Distinguished Flying Cross, Meritorious Service Medal with one oak leaf cluster, Bronze Star and the Air Medal with seventeen oak leaf clusters.

General Cabell is the third member of his family to attain general officer status. His late father, General Charles P. Cabell, retired from the U.S. Air Force in 1962. At that time he was the deputy director of the Central Intelligence Agency. His great-grandfather was a brigade commander for the Confederacy until captured in 1863 by Union forces.

The general is married to the former Helena S. Callaway of San Antonio, Texas. They have a daughter, Carrie and a son Pearre.

-30-

Biography

United States Air Force

ELECTRONIC SYSTEMS DIVISION, AIR FORCE SYSTEMS COMMAND, HANSCOM AFB, MA 01731
OFFICE OF PUBLIC AFFAIRS (617) 861-5316

BRIGADIER GENERAL CHARLES P. CABELL, JR. (Cab'l)

Brigadier General Charles P. Cabell, Jr. is the Deputy Commander for Airborne Warning and Control Systems (AWACS) at the Electronic Systems Division of Air Force Systems Command, Hanscom AFB, Mass. In this position he directs a program of development and acquisition of an airborne command and control system equipped with radar, computers, displays and communications to direct aircraft operations against ground and air targets.

General Cabell was born July 12, 1936 in San Antonio, Texas. He graduated from Gonzaga High School in Washington, D.C., in 1953 and from the U.S. Military Academy at West Point in 1958, with a bachelor's degree in engineering. He was commissioned a second lieutenant in the Air Force upon graduating from the Military Academy. He earned a master's degree in astronautics at the Air Force Institute of Technology, Wright-Patterson AFB, in 1967, and a master's degree in systems management at the University of Southern California in 1971. He is also a 1974 graduate of the Air War College at Maxwell AFB, Ala.

After flight training, General Cabell earned his pilot's wings at Vance AFB, Okla. in 1959. He was then assigned to Chennault AFB, La., where he flew B-47s. In 1961 he was transferred to Loring AFB, Maine, as a B-52 pilot.

In 1967 he went to Southeast Asia serving initially as an aircraft commander in the F-4 Phantom at Cam Ranh Bay and later a a forward air controller and air liaison officer in the 0-1 Bird Dog. During this SEA tour the General logged over 500 combat flying hours.

General Cabell's next assignment was to the Satellite Test Center in Sunnyvale, Calif., where he was director of the field test force for a number of satellite programs. After graduate study at USC, and attending the Air War College, he became assistant to the director of Land Warfare for the Directorate of Defense Research and Engineering in the Office of the Secretary of Defense.

OVER

(Current as of March 1984)

gram manager working with my procurement community, it's going to be harder to reach these win/win deals. So there is a lot of work to do. I hope we can help each other.

Thank you very much. I've enjoyed being with you today.

different conditions. I've mentioned risk on the Government side. But there are different risks in various aspects of the program.

Low volume production programs - again, that's not really just ESD's problem. The space program has the same problems the ones and twos. Even those that have high volume production, often you don't reach high rates until much later. Some may never end up in a plant rate. The AWACS could have been produced at the rate of about 12 a year. Instead, we produced two or three. When the program was formulated it was about twelve per year based upon how fast you can make radars. Well, we never did that. But here still ought to be some way of handling that from the VE standpoint. Some of that's going to have to require some FAR changes to increase the contractor's share and to increase the share period for these kinds of programs.

The last one here is a GAO suggestion, really one needs to have more management attention on both sides. If we don't, we are going to let these disincentives mentioned here defeat us. We are not going to get as much out of it as we can even within all those restrictions. So I think it is worth while paying the management attention on both sides. You get clever people together and they can stimulate each other to solve the problems. Clever people, when they put their minds towards something like that, can overcome tremendous obstacles. We've got to improve those flow times, and to do that you've got to set your goals, set some milestones, execute, and go on to the next step.

The team approach is one of the things on the previous charts. The homestead letter says we're thinking about something along this line. How do you feel about it? Start negotiating way back then rather than requiring the system to throw you a package over the wall. Then you look at it and say, "This is terrible. Do it over." It's going to require a team approach and I think some of that is not happening. The SAVE program that Dick L'Heureux and John Orphanos are going to be mentioning in the session this afternoon developed about a year ago does these things. I think we're finding pay dirt in ESD. But as I say, after having talked to me, they have gotten more ideas because they start listening more. If you come up with good ideas, please let them know because we are really motivated to try and make this work. In summary, value engineering and value analysis is an effective tool. But, it's the business arrangements, the incentives, the disincentives, the lack of a clean win-win that really hurt the program. Unless we attack some of those, we are never going to get the kind of full potential that we should. We have got to simplify the process and come up with some ideas today. We ought to really pound hard in the workshops this afternoon to try and get the gold. We've got to make it more profitable for the contractor to invest. If it's just a social cost for the contractor, he is going to try and minimize it. If we have contractors that act any other way, then they are very stupid contractors. And I don't want them doing business with us. They have got to be in business to at least make some money. Unless I have more flexibility as a pro-

on from both sides. One of the other speakers mentioned that he'd rather have change notices and let you get going. I believe that the Systems Command is not going that way. If anything it's going the other way. We're going to want negotiated packages. My boss, General Chub, has turned down every change notice we've had since he's been there. He may let you get started on some items but you've got to have a negotiated position within a very short time. I'm sure that 45 days is not unreasonable to him to have something negotiated. I'm not sure I'd hold much hope for the change notice procedure because of all the other problems right now with pricing and other related headlines. We're just going to want to know what we're getting into at the start. All the momentum I think is going that way-fully negotiated rather than a change notice. As for higher priority, unless you receive higher priority within Program Offices, it's not going to work. Find a way to transfer funds. You really do get into the business of the collateral versus the instant. Unless we can find the mechanism to overcome that, I don't see any way out. Nobody said this would be easy. Funding is going to be one of the tougher aspects.

I'm not trying to set up a series of obstacles and throw up my hands at the end of this and say obviously with all these obstacles we're not going to be better because these are too hard to do. I'm bringing them up here because I think unless we recognize them and are willing to take them on, no real significant improvements are going to be made. I think the potential is there. Models are needed for establishing life cycle savings. Right now we have a tremendous range for potential disagreements; ten - twenty - thirty percent apart. We need better up-front ground rules during negotiations. Innovative inputs are needed. For example it may be useful to determine the cost to set up a production line to handle a new idea. There may be smarter ways.

Perhaps a sliding scale for sharing would be useful. I noted no one seemed to have picked upon this one. Maybe there's a perception that it's too hard to change regulations. Where you are in the acquisition cycle makes a tremendous difference. If you have the same scale and 20 percent of one year that's going to make a huge difference depending on what part of the cycle you're in. I think that one ought to be able to look at the total life cycle picture and make some judgements based on that and have a sliding scale for handling it. If you don't, you're never going to achieve the high potentials in this program. Trying to do something in the FSD phase may cut down the price of that item in the production phase. But the contractor is expecting to get his money back because he underbid his FSD. That might be a disincentive unless there's some kind of sliding scale to recognize the collateral area.

Subcontracts are another problem. This is our own arithmetic. One percent savings are worse if you have to share it with the subcontractors. Again, it is not worth the pain. The sliding scale should be variable and sensitive to the risk sharing under

will say, "Your VECP rate is low compared to so-and-so. Do more." So we'll put pressure on the contractors. We'll develop some VECPs. They'll get into the mill. That's reality, I believe. And I believe that for all the talk about incentives on both sides, disincentives are really the more powerful motivators.

I was interested to see that Hughes seems to be doing so well. Maybe the Hughes model is something that we ought to be studying a little more deeply and more seriously because maybe it really works better than the way I've presented it here. I also have to say that the look that we took was fairly narrow. Let me put on one of the charts, which I had not planned to have in there but seemed a target of opportunity. I talked about the ESD SAVE program, and originally it was a sunshine kind of program. But I urged those sponsoring the ESD SAVE Program to go to the contractors. Don't just talk to them. Spend 85 percent of your time listening to them. Hear what they are really saying rather than telling them what a good deal VECPs are. Because there are obviously some things wrong. So they did. They went out and talked to seven contractors. You see the results there. The ASD study which was done about the same time had about the same results. I would like to say a couple of things. What's interesting is that those things I mentioned as disincentives do not appear as disincentives to anywhere near the same degree to all contractors. I think this is interesting. Some contractors are apparently finding ways around it. I think it well to focus on some of those differences. I also find that the two contractors with whom I talked are in columns D and F. They had problems with all of the disincentives. So it might be that I have a local problem within my program office. Or maybe it's ESD that has the problem because of the way we do things. Or it may be a problem because of the kinds of systems we have in ESD. AWACS is the odd program at ESD. I don't mean that it is peculiar, it's just not the usual program in ESD. You usually find AWACS type programs in ASD airplanes or similar platforms. We build a lot of black boxes, small production runs, perhaps only one or two. Small quantities introduces an entire set of different problems than long production runs of ammunition, missiles, and similar items. But we should not be satisfied with identifying problems we need some suggestions for better deals for everyone. That's really been emphasized a lot this morning.

I should probably be embarrassed to note that number one is that our average VECP processing time is 285 days. Having looked around a little bit, it's not all that unusual. Unless we can correct that, we're not going to get anywhere with the VECP program. Nobody is going to get any real savings. Four to six months is probably a reasonable goal. I have taken a personal oath to myself that we are going to try and do that at least within AWACS. If you can't, you're in trouble. I think the key to that is getting a better pricing package. You know, we first submit a ROM or a MTE and that just adds delay. We really need to submit something that is reasonably accurate or we're never going to make it. It's amazing how quickly you can negotiate if the pressure is really

a matter of attitude and willingness to take a change here and there; otherwise we're never going to get to a point where we can even negotiate. We may never agree on the savings.

The Government may have to invest initially to achieve a later savings. As Program Manager, I smart a little bit at the implication that I'm not going to try to save the Command money. I am eager to do what I can. But the fact is I don't ordinarily have a lot of money with which to work. I'm budgeted very tightly. With most contracts I'm going to have to worry about husbanding my very meager management reserve because the contractors come in tight also in order to win the contracts. There just isn't going to be a whole lot of money floating around. That's the pure truth of it.

Also there is some perception that "you (the contractor) could have built it better." These are real perceptions of greed and chicanery. Occasionally they may be correct. Right now we are processing a defective pricing case involving a VECP. The situation can be described as hard to measure and negotiate savings in the first place. Then after completing negotiations, some years later some auditor returns, looks and says that was unfairly priced. Now it's almost double dipping. It reinforces the perception of hard to measure savings, difficult negotiations, and chicanery.

On the Government's side, if the program manager does have money, he has a choice. Does he fix something that is broken? Does he invest for a saving down stream? Or does he enhance the system because the operators seek performance improvements because they've had a chance to work with the system a little bit and now know what they really wanted in the first place? If the money is available, does it go for VE for collateral savings? Maybe; maybe not. We are forced to make that kind of choice and its not always an easy one.

These are the assertions uncontaminated by rigorous analysis, but I could not find anybody that disagrees with this. I guess I am confident. I'll give you one more page. Given a choice, I find that all of us, the Government or the contractor, put the VECP in third place. Consider what the priorities are. We would really rather have a no cost ECP and then an urgent ECP. The VECP comes last because it's a hassle. Its a shared program; its a lot less clean. We have to argue about how much we are going to save later on rather than just treating it as something that needs to be done now and are willing to pay the price for it. It takes too long to process the VECP. Its a lot easier to process an ECP.

A VECP is probably often considered a social cost by the contractor and the government. DoD says that it wants VECPs. Contractors might say, if I'm not on the VECP bandwagon to some extent, I'm going to be perceived as somewhat unruly and not "with it." Government program managers are similarly burdened. Somebody

savings, an increase in quality or at least no decrease in quality or no risk to decrease in quality and an increase in capability or at least no decrease. I decided to take a look at them one at a time. In some ways I am reporting what the contractors told me. The profit incentive even when viewed from the cash flow competitive position perspective is seen as a "colossal pain." It really seemed there was really insufficient reward for all that pain. There was no profit on the implementation costs at least according to the contractors. It costs something to perform VE and yet there isn't any profit on the implementation costs. Other speakers mentioned the same thing. You may get credit on the wrong contracts, not on the instant contract but on future contracts, or subcontracts or somebody else's. All this turns out to be a disincentive.

For cash flow, it's the near term cash flow that is generally more important to a contractor than later on. But this invest now, pay later scheme is definitely a disincentive. Payment may be much later with VE. As for competitive position, the savings of 2 percent that we had and the 3 percent mentioned by others is probably a minute effect to none at all.

Also, you can't afford to use the best people. This is an interesting point. I think most of the companies we deal with put very good people as value engineers to monitor the programs. They are motivated. They're very good advocates. But the companies generally can't afford to put their best engineers on something because of that small return on the VE investment. To figure out the cleverest way to fix this black box so we get the most cost savings is generally going to be far down in the priority list. As for enhancing reputation - a VECP that is publicized when it is submitted and is still not implemented a year or two later does nothing to enhance reputation.

These are some of the things I worry about as program manager. My procurement people worry about key persons, and dollars and quality. Any changes you make to something that's working adds performance risk to some degree. We have to consider the trades- sometimes it will take a while to sort it all out. A change that appears appropriate superficially, may turn out to be otherwise. These considerations may seem to be quibbling or slow rolling to some of the contractors. But it is still necessary to consider not just cost but many other factors.

Somebody mentioned that "you could have built it better. Why didn't you?" I should have added, "you dirty rats." There is that perception, we have to recognize it, and we have to be somewhat clever, on both sides, about how we approach it.

Cost savings again, nothing new here. It is hard to measure. How much are you really going to save? Hughes came up with a cost model for collateral savings. Maybe we need to do something in this area. Everybody ought to consider it. But how do you measure it? We don't have any accepted models. It's going to be

estimated total AWACS savings was calculated back then at about 80 million dollars. Boeing Aircraft, because of its work on the AWACS, had won the DoD VE award for FY83. Our own VE monitor, Gus Oesterle, is sitting back there. We are very proud of him. He also won the Air Force VE achievement award for 1983. I thought in preparing for that conference I really had an easy job. Because all I had to do was analyze what Gus and Boeing had done and preach it to the rest of you. I would tell you to do exactly as we had done. You could win the award too. Well then I began to look at the data coldly and ended up, if not bearish, at least a lot less bullish than I was on VE, for several reasons.

That 80 million dollars I talked about, although a large number, really only represents a very few VECP's over a 12 year program life. AWACS has been around a long time and if you do a little arithmetic the 80 million dollars in the 4.5 billion dollars we've had for AWACS is less than two percent. Also, its been a long time since anybody has submitted a VE Change Proposal. Nor have I heard about any of the VE Change Proposals that had been previously submitted but not yet approved. It just seemed to be dragging on. Nobody was beating on the doors. This presentation was prepared last April or March. It is still true. There are a couple that are in process but the last actual VECP submitted on the AWACS program was in March 1983.

The GAO report which had come out about that time called for a lot of management attention on both sides. If we have to keep telling ourselves and contractors what a great deal it is, is it really? Why do we have to keep encouraging participation? I think that's a very good question we ought to ask ourselves. If it's really such a good deal it ought to be somewhat self motivating. My conclusion, at the time, and I continue to feel this way particularly after hearing several of the speakers this morning, is that the incentives on both sides may be more apparent than real.

So I began to concentrate on the incentives versus the disincentives and really began to wonder whether this win-win deal we thought we had and are telling everybody about was in fact, something else. Having started coming to some of these conclusions in embryonic form I decided to talk to a couple of contractors. Boeing came right in from Seattle. They were really eager to talk to me about this. It was a little easier for Westinghouse. They are just right down the road. I tried to get with at least the major contractors to think about incentives for the win-win deal in the generic sense. There's got to be some on the contractor's side and on the Government's side.

Unless a contractor has some combination of increased profits, better cash flow - particularly near term, some improvements in his competitive position and some enhancement, or at least no degradation to his reputation, he is not going to be very interested in any kind of a deal whether it's VE or anything else. And on the Government side, paralleling that we need real cost

Air Force Electronics Systems Division, Hanscom AFB.
Brigadier General Charles Cabell, Jr., Deputy Commander AWACS

Well, good morning. I think Frank Angiulli talked about repeats. He talked about it in a slightly different context. And of course, the last speaker mentioned the problem. The fifth speaker, especially on a fairly narrow subject like this one, can expect to find some repeats in the material. And so, I can say right at the outset, if you paid attention to Frank and the last speaker, you will realize there is a lot of similarity including some of the terms. I used win and lose, others used disincentives, inoculations, and fixes. Maybe what I really ought to do is have a quiz after this to grade you on your ability to discern among the four presentations we have had today.

Out of this "crisis of agreement" perhaps it is well to consider that if all of these speakers have come to essentially the same set of conclusions, it is probably worthwhile to pay some attention to them. Probably this reinforcement is not all bad. This is my overview.

Actually, two funny things have happened on the way to the conference. First, I originally prepared this briefing for the ADPA conference back in March. I flew down from Boston and I got a call saying that there is no conference. This is the same talk I would have given then. Those of you who missed it then, be of good cheer, you are not going to miss it this time. I am going to cover the topics you see there.

I have previously accepted VE sort of uncritically during several jobs at Wright-Patterson and my second time at ESD. But after I got into it lots of things happened. When you are forced to give a speech on something you have to get smarter than you were. I called in some people and started discussing it. Things didn't seem nearly as rosy as they had when I was in my uncritical stage. As I began to look at it again, I came to the conclusion that it's not necessarily win-win. Its probably win-lose sometime. That led to a search for some better ideas to improve the system. At the same time, almost coincidently, ESD was having an initiative called "SAVE," the Strategy to Advocate Value Engineering, which was really just that. It was intended to motivate everybody across our command and our contractors. It is to show everybody that this was a win-win deal. It didn't come out exactly like that after I had some interaction. My conclusions and summary, I think will be on a more positive note, which you will find through the briefing.

Another funny thing happened on the way to the conference. I really started out bullish and for a very good reason. The

History (continued)

FMC

1980

— Developed an operating plan for value engineering and established a formal value engineering department at FMC

1981

— Conducted formal VECP training through the use of consulting services supplied by Bill Dean. The Government approved 5 VECPs and FMC received DARCOM's certificate of achievement in value engineering

History (continued)

FMC

1982

— The Government approved 9 VECPs and FMC received DARCOM's award for outstanding achievement in value engineering

1983

— Conducted second formal training session again using Bill Dean's consulting services. The Government approved 8 VECPs and FMC received DARCOM's award for outstanding achievement in value engineering for the second consecutive year

History (continued)

FMC

- 1983 (continued)
  - The Bradley Fighting Vehicle and LVT7A1 Program offices were both awarded value engineering honorary achievement awards by DoD. FMC made major contributions to both of these programs in 1983

Statistics

FMC

			1981	1982	1983	Total
• VECPs	submitted	(Army)	9	7	11	27
		(Navy)	0	3	4	7
• VECPs	approved	(Army)	5	6	4	15
		(Navy)	0	3	4	7
• VECPs	rejected	(Army)	0	4	1	5
		(Navy)	0	0	0	0
• Acceptance Ratio		(Army)	100	60	80	75
(Percent)		(Navy)	0	100	100	100

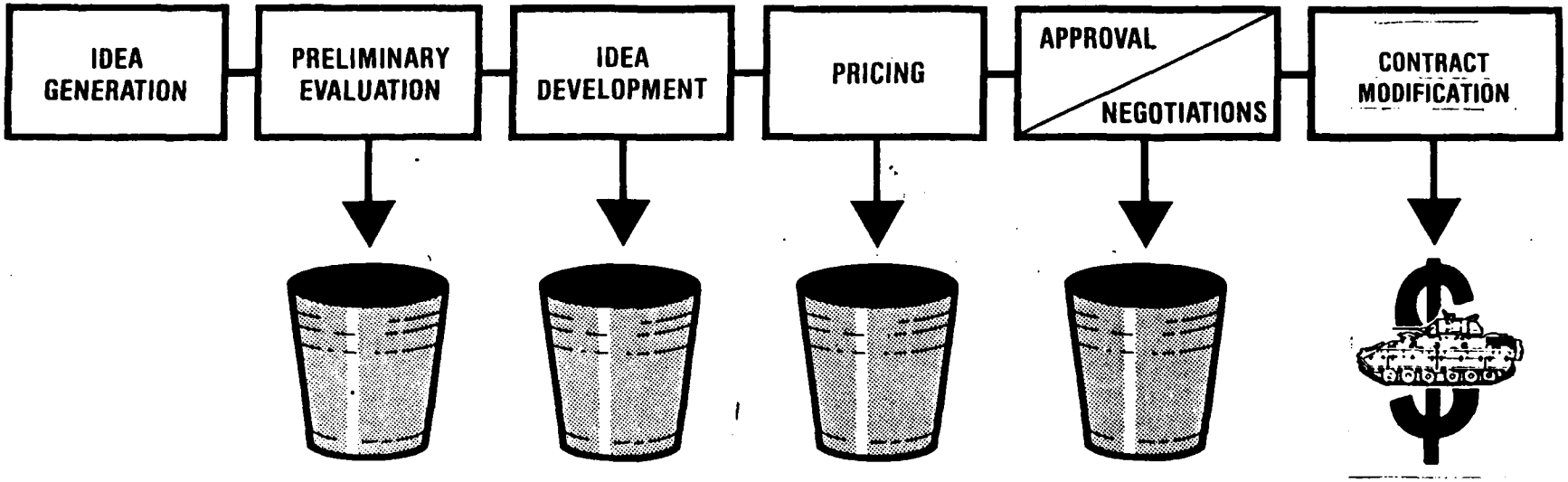
Overall acceptance ratio 81%

28-10-84

Process Overview

FMC

VECP Process Flow

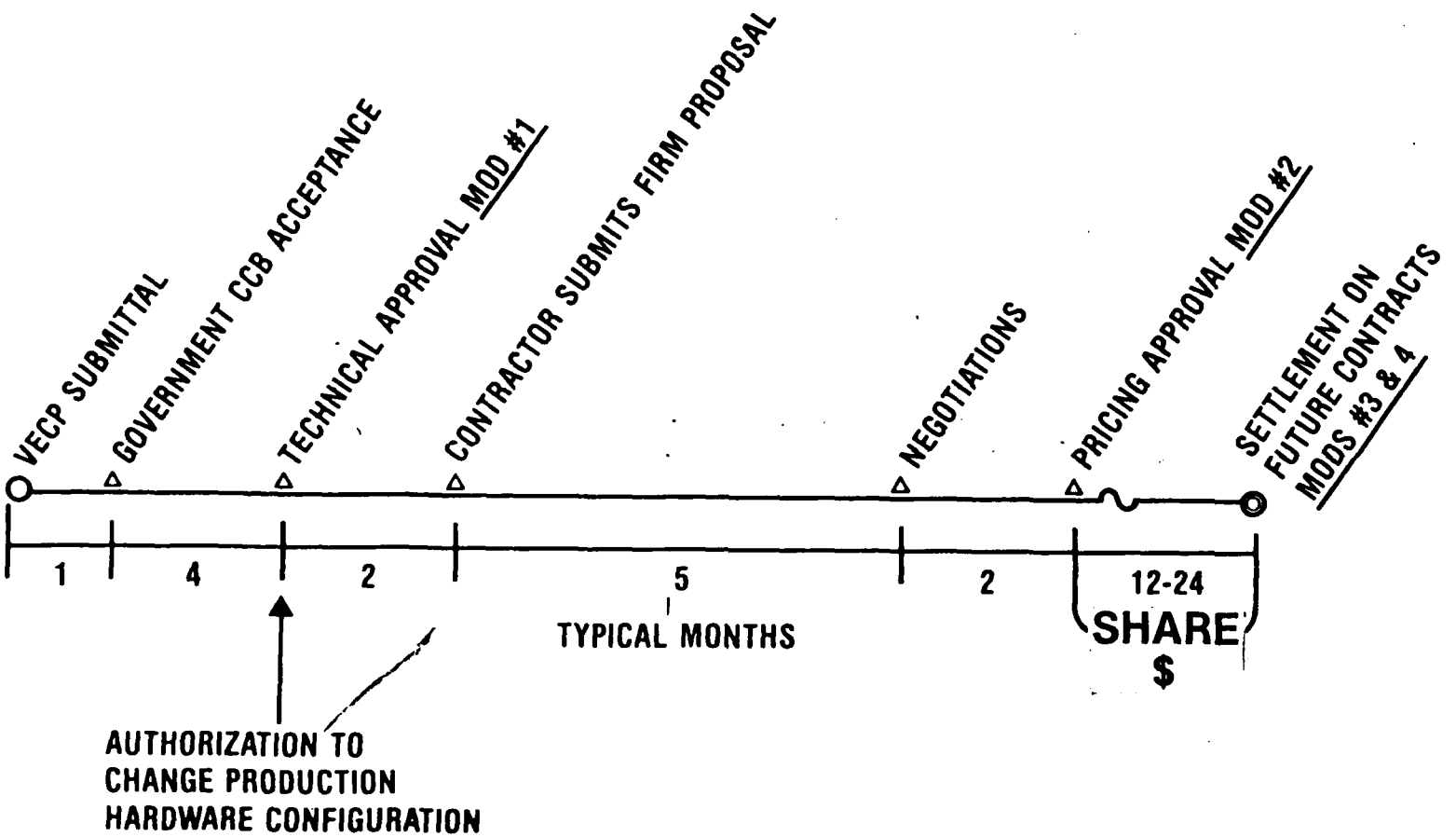


(41-21-84)

Process Overview

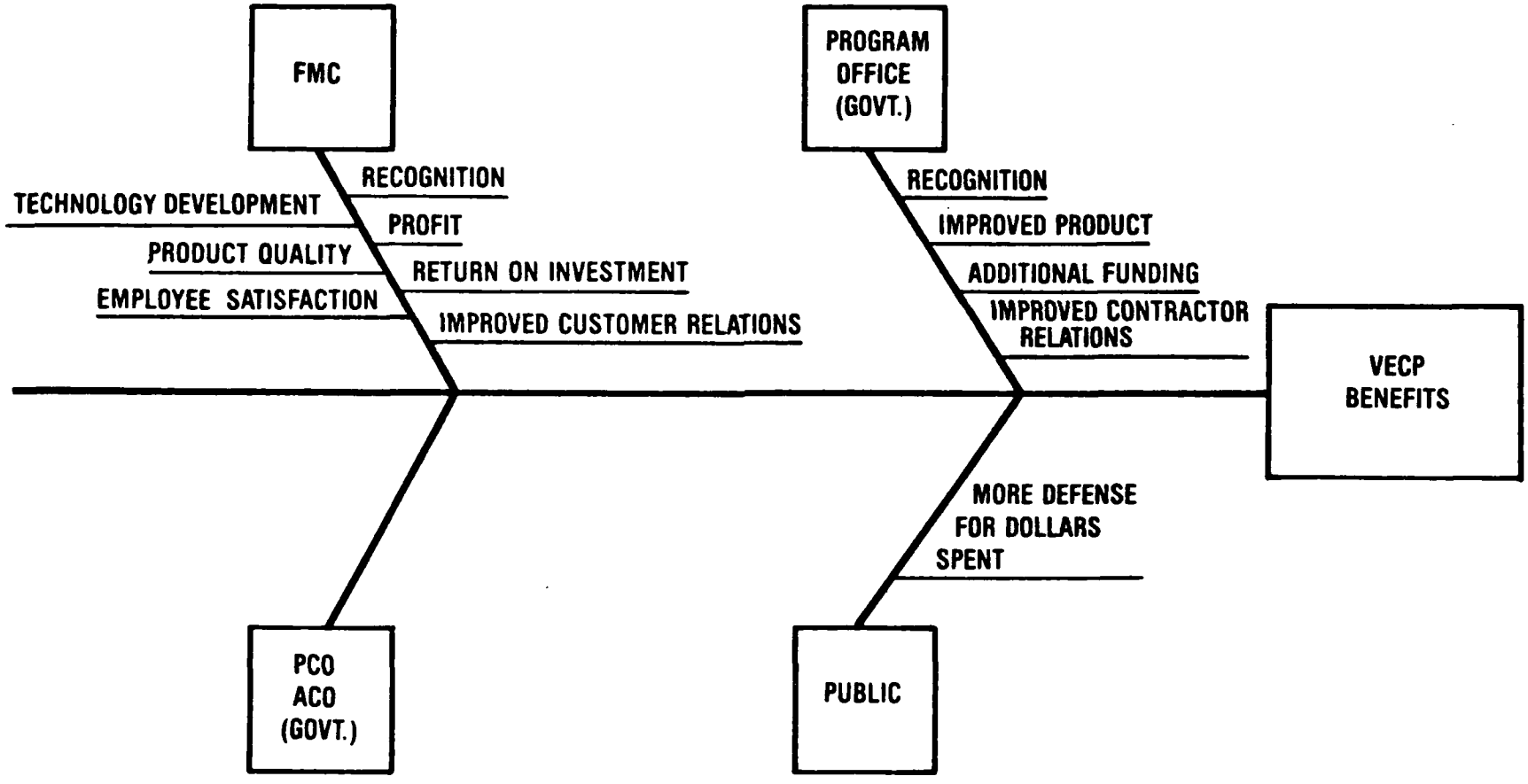
FMC

Government Approval and Negotiations



28-19-84

What Are The VECP Benefits?



(41-21-84)

What Makes Value Engineering Work at FMC?

FMC

- Government pressure
- Open lines of communications with the customer
  - Daily contact with program offices
  - Bradley program bimonthly status meetings
- FMC management support
- Government funding under mandatory program clause
- Value engineering staff (permanently assigned)
- Employee involvement
- Government recognition
- FMC internal promotion of VECPs
- Thorough up-front analysis

(41:21-84)

What Has the Government Done to Promote VECPs at FMC?

FMC

- Implemented both incentive and mandatory program clauses in the same program.
- Requested a modification to the basic mandatory program clause (1981 DAR deviation).
- Contracted for the mandatory program clause under a support to production contract.
- Implemented reasonable data requirements.
- Funded subcontractors under the mandatory program clause.

Summary

FMC

The VECP process is complicated. The rewards to both the Government and contractor are well worth the effort. Success can only be achieved through good *COMMUNICATION* and *COOPERATION.*

(41-21-84)

FMC Ordnance Division
Value Engineering (VE)

Chris Huffman, VE Program Manager

My presentation this afternoon is going to center around our experience as a relative newcomer to the DoD Contractor VE program. We have had Value Engineering clauses in our contracts for quite some time. However, we weren't active because of the many difficult problems that you have already listened to today. About four years ago our Value Engineering program began to be emphasized. Consequently, we don't have the lengthy statistics like some others with twenty-five year old VE programs. However, our statistics are quite unique. For the short period of time that we have been very actively involved in the Value Engineering program, we have had an excellent success ratio. We and others believe our statistics indicate a program that is more successful than most. I'm going to talk today about some of the reasons why our program has been able to be so successful in such a short period of time.

It all starts with a common thread that we feel we have in our program. It's built around two words "communication" and "cooperation." We feel that we have built a very tightly knit team. Something else that is unique about our program is that we have a very active program manager office. A good deal of the success of our program and our statistics we owe to the Bradley program office, recently renamed the Light Combat Vehicle program office. They have taken a very active role in Value Engineering. In fact, they have been recognized as the leader within the Army for the last two years. So they have helped our program a lot. The word "team" is really meaningful, it describes how we really interact on a daily basis. We work together as a team. When BG Donovan presented our VE award this last year, one of his comments was, "This is a win -win situation for both of us." That is the benefit from a team relationship. That's what got us where we are today.

What I would like to do is cover a little bit about the history of our program so that I can add credibility to what I am saying. Then we can look at the FMC statistics and the organization. Then I would like to address some common questions. In some of those common questions, I'll highlight some of the concerns we have and finally summarize them.

Prior to 1979, our experience was typical as with almost any contractor back then. The VECP program was a tough program with which to do business. There wasn't the Government attention to it that we see today. We did submit some VECPs haphazardly whenever somebody was motivated at FMC. However, our success was not very impressive. We had many turned down. We had some that languished. We did get a few approved. However, it then took a long time to get them settled.

In 1979, we performed our fist real Value Engineering Study at FMC. The result of that was a number of VECPs for the Bradley program. We engaged a consultant to help with that first study. In 1980, we developed an operating plan. We established and staffed a formal organization of four to five people as a Value Engineering Department. We really started working in earnest.

In 1981, it had already started to pay off. We had five VECPs approved in 1981. We received a DARCOM certificate of Achievement which is the first level of VE awards within the DARCOM community. In 1982, the Army approved nine VECPs, so we continued to progress. In that year we received the second level of award from DARCOM, the Outstanding Achievement Award. In 1983, we did some additional training and engaged another consulting service to try to improve the knowledge within the division. Again, we achieved DARCOM's award for outstanding achievement for the second consecutive year. Thus, after two years of activity we were able to achieve DARCOM's awards. The awards are significant to our management. In fact, in Ordnance Divisions front lobby there are pictures honoring the founding fathers of FMC. There are no other pictures or plaques in that lobby except the VE award plaques. Our management is very proud of them and wants the people that pass through the lobby to see the plaques and awards. We also handle a Navy Contract, the LVT7. In 1983, both of the contracting offices for which we are prime contractors received DoD Honorary Achievement Awards. We were all very proud.

These are submittal and approval statistics for 1981, 82, and 83. We have submitted 27 VECPs through 1983. Of those 15 were approved and only five were rejected. We have an 81 percent acceptance ratio which is higher than the average for the community.

Our organization is structured in such a way that we really have a matrix organization at FMC. Our department is part of the Engineering Division. We interact directly with the program managers of our three major programs. And, as somebody else mentioned, our program managers do have VE goals which are considered during their evaluation each year. So their performance is tied to achieving these goals for VE. This puts a lot of teeth into the program.

This is a chart that shows the process flow of how we go about generating our ideas.

We do an early preliminary evaluation. It stays completely within FMC until we decide whether or not to continue to pursue the idea. We develop many ideas and have a sizable backlog. We follow these ideas up with our pricing community and all of the other functional organizations within the company so that we can foster a positive attitude and forestall our negative attitudes. What we've tried to do within our VE department is to screen out all of the non-productive proposals and process the productive ones. I think this screening process is one of the reasons that

we may have a fine success ratio. We do an excellent job of screening them early. This screening also includes interacting with our customer and finding out whether they are going to be receptive. We also begin our VECP marketing at that time. We then go through the formal idea development and prepare the VECP, submit it for approval and then negotiate the contract modification.

This is a time line showing our experiences with VECPs acceptances, negotiation, and final contract modification. Typically, this is a considerable period of time. It was disconcerting to FMC personnel when we first started this activity. We knew it was going to take a long time, but many didn't recognize the impact. We tried to speed up the internal mechanism. But it still takes a long time to get VECPs accepted. That's not news to anybody here. We see the benefits coming back in about a year or a year and half after we start. That has improved. We have worked with the program office. One thing that I'll mention a little bit later is how we work with the program office. A very helpful tool is a bi-monthly status meeting we have with the PMO. In these meetings we are able to make some changes in these areas.

I listed some usual questions that people ask me, such as how does our program work? Why do we consider ourselves successful? What makes us submit VECPs?

These next three charts are some of those typical questions. This chart represents the benefits. These are the benefits we see from our VECP program. On the FMC side we get a significant technology advancement out of our VECPs. I once prepared a chart for the Bradley program manager, as he was concerned that the VECPs might degrade the quality of our product. I prepared a chart of 12 VECPs that we had approved at that time. I evaluated aspects such as weight, reliability and maintainability, and similar considerations. There were very few technical and quality aspects that were degraded. Almost all were improved. So you really do receive a beneficial technology advancement out of VECPs as well as lower costs. Let me emphasize, Product Quality is usually improved. That is very important. Anytime you reduce the number of parts in a vehicle you almost always improve the maintainability of that product. VE adds to employee satisfaction. Many FMC employees have commented to me that it can be frustrating when their ideas are not adequately considered. Now they are pleased that there's a place where they can submit these ideas. It relieves some of the frustrations the employees have had. Conscientious employees really want to do a good job. They really want to submit these ideas. But prior to our department having a formal organization, these people really didn't know what to do with their ideas. I'm seeing more and more people starting to submit ideas. We really do have a lot of interested employees.

VE has improved our profits which is also important. The investment in terms of resources is very low compared to the other types we make in our business. To make the same amount of profit

on a new contract we have to dedicate more resources to fulfill that contract. We can take a very minor VE investment and turn it into a very high return. That same aspect holds true with the Government side of VECPs. We also receive improved customer relations. We feel we interact well with our customer and have helped build good relations.

On the program office side, you have recognition through the awards system, an improved product at lower cost, and technical benefits. The result is the availability of additional funds so that they can support other programs. They also have improved customer/contractor relationship.

When I filled in this chart I couldn't think of anything to put for PCO and ACO benefits. That really left me with a message. That has to be one of the areas where we have the most difficulty negotiating VECPs. I guess if FMC has one major area that they would like to see some improvements in, its that area. I think there is probably a lot more that we could do. Maybe this is a good topic for the workshops. Bill Copperman said that we need to provide some incentives because Government people don't have the same incentives.

I am often asked, why do we submit VECPs? Government pressure is an important reason. Mr. Bidwell sent some people to FMC, back in 1979 and asked us to look into VE. Because of that we did. That is really one of the stimuli that initiated our program. Another reason is open communication. We at FMC really do have continued contact with our customer.

One of the major items is next, the Bradley program-wide bi-monthly status meetings that were originally organized by the Bradley Program Office. We have bi-monthly meetings; BG Donovan presides over these meetings. We meet with the contractors and subcontractors and all of the commands that are involved in the Bradley VE program. We discuss the status of each major element of the VE program. There is a lot of feedback, and a lot of attention paid to action items.

Another major area that is really important to our VE program is FMC top management support. They dedicated the resources and the effort. They are really behind the program.

We also have Government funding from the mandatory program clause, which is a little unique. It works well. It gave us some of our initial incentives to pursue VE. We have a dedicated VE staff that is permanently assigned. We have employee involvement and Government recognition. The lists are long. We have a lot of good things here that make the program work for us.

Within the Bradley program there is a very active program office which has been most helpful to us. They have done some things that are a little unique. So it might be of interest to

LIMITED COMPETITION

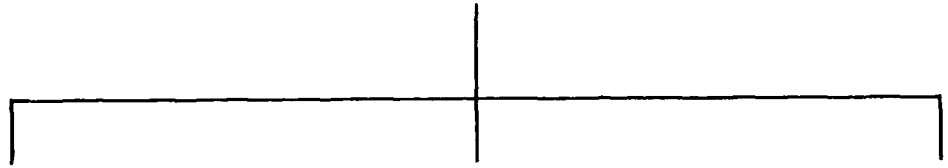
* EXCLUDE SOURCE
* SMALL PURCHASE
* SET ASIDES
* ARCHITECT - ENGINEER
* BASIC RESEARCH
* GSA MULTIPLE AWARD


FULL, OPEN COMPETITION
SEALED BID
COMPETITIVE PROPOSAL
IFB
RFP
* ADEQUATE TIME
* ADEQUATE PRICE CRITERION
* ADEQUATE SPECIFICATION
* REASONABLE COMPETITION EXPECTANCY
* TIME SHORT
* PRICE CRITERIA UNAVAILABLE
* DISCUSSION REQUIRED
* CAN'T EXPECT "FULL" COMPETITION

METHODS OF CONTRACTING

PL 98-369

ETA 1 APRIL 1985



WHERE TO FIND IT - VE

TOPIC	DAR	FAR
DEFINITIONS	1-1701	48.001
GENERAL	1-1702	48.101
POLICY	1-1703	48.102
CLAUSE USAGE	1-1704	48.201
PROCESSING	1-1705	48.103
SHARING	1-1706	48.104
RELATIONSHIPS	1-1707	48.105
VEI	7-104.44A	52.248-1
VEPR	7-104.44B	
BOTH	7-104.44C	
NO COLLATERAL	7-104.44D	
A-E	7-104.44E	52.248-2
CONSTRUCTION	7-602.50	52.248-3
SERVICES	7-1903.51	52.248-1

POSSIBLE FORMS OF THE FAR VE CLAUSE
(APR 1984)

* STANDARD VEI

* VEPR (ALTERNATE I)

* BOTH (ALTERNATE II)

* NO COLLATERAL (ALTERNATE III)

* ARCHITECT - ENGINEER

* CONSTRUCTION

* NO COLLATERAL CONSTRUCTION (ALTERNATE I)

* EXTENDED PRODUCTION

* LOW RATE INITIAL PRODUCTION

THIRTEEN PARAGRAPHS OF A VE CLAUSE
(APR 1984)

A. GENERAL

B. DEFINITIONS

C. VECP PREPARATION

D. SUBMISSION

E. GOVERNMENT ACTION

F. SHARING RATES

G. CALCULATING NET ACQUISITION SAVINGS

H. CONTRACT ADJUSTMENT

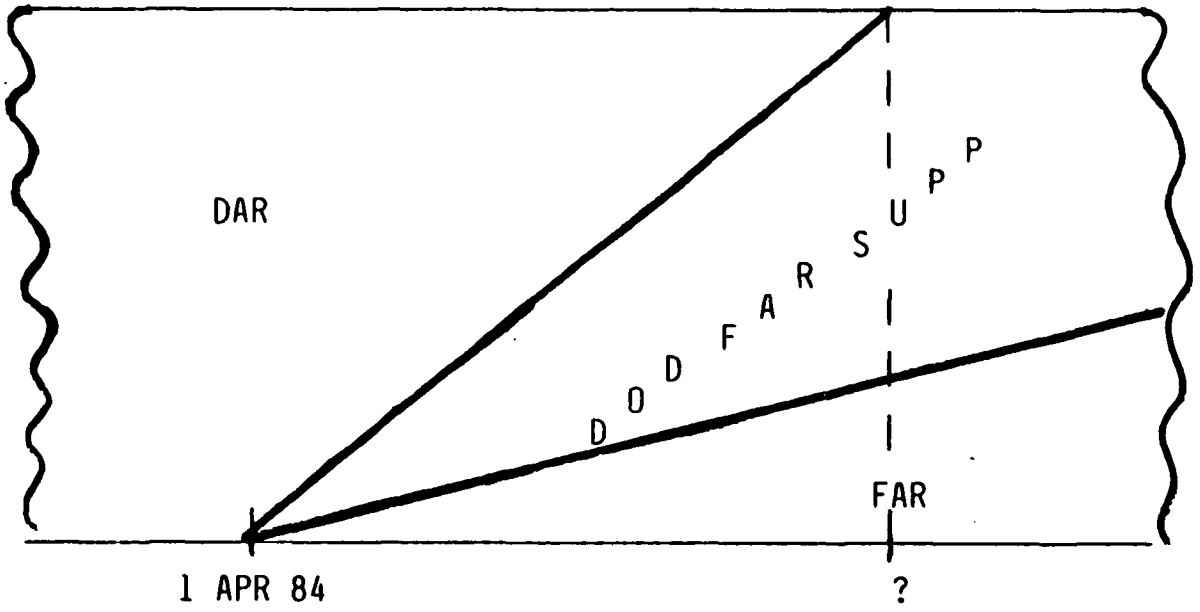
I. CONCURRENT AND FUTURE CONTRACT SAVINGS

J. COLLATERAL SAVINGS

K. RELATIONSHIP TO OTHER INCENTIVES

L. SUBCONTRACTS

M. DATA


DAR
DODFARSUPP
FAR
1 APR 84
?

A FEW VE MILESTONES

* APR 74	GFM DROP
	OVERHAUL MAKE BELIEVE DROP
* AUG 77	UNSOLICITEDS DROPS
* DEC 80	INCENTIVE CONTRACT DROP
* OCT 82	NO-COST CHANGE
* APR 84	THE NINE FORMS OF FAR

A FEW REG - MILESTONES

* 23 MAR 78	ASPR CHANGEOVER TO DAR FIRST COMPLETE DAR REVISION EXPECTED LATE 1978
* SPRING 78	"FAR IS TO BE READY FOR PUB BY 30 AUG 79"
* 30 JUN 82	"FAR IS TO BE EFFECTIVE 1 OCT 83" OFPP
* 1 APR 84	FAR EFFECTIVE
* 31 MAR 85	"FAR REVISION SHALL BE COMPLETE 31 MAR 85" CICA

Very quickly, I'll go over the next visual with you, THIRTEEN PARAGRAPHS OF A VE CLAUSE. Perhaps I should remind you that under this, the clause currently going into contracts, we have 13 paragraphs, under the DAR clause we had ten. In summary, each of the thirteen paragraphs has a function: para A speaks to the general objective of the clause; para B provides some useful definitions; para C the minimum information to be contained by the proposal; para D, the route and method of proposal submittal; para E, action by the Government, including the absolute and final aspects of certain actions of the Contracting Officer; para F, sharing rates for acquisition savings sharing; para G, how to calculate the acquisition shares; para H, how to set up the contract modification in order to provide for shares; para J, particular instructions for concurrent and future shares; para K, the relation of VE sharing to other incentives; para L, a particular emphasis placed upon subcontractor participation in contractual VE; para M, the government's rights in the technical data associated with the VECP.

My next visual, POSSIBLE FORMS OF THE FAR VE CLAUSE, is reasonably self explanatory. These nine versions of the VE clause are described in Part 48 of the DAR and will not be expanded upon further here.

The visual entitled, WHERE-TO-FIND-IT, is also considered to require little added comment. Its basic function is to tell the casual observer where some things could be found, in the DAR as well as in the FAR.

The final four visuals are a summary of the approaches to contracting called for by the now notorious PL 98-369. The only listing that I would commend to your particular is the indication, in the public law, that functional specifications are appropriate for use.

In conclusion, I would like to remind all of us that the latest coverage of Value Engineering in the regulations is involved, complex, and deserving of study. If we don't study that devil, it is going to bite us. Thank You.

Material or GFM. Under this special treatment, GFM which is one of five categories of GFP, could be the source of a fifty percent savings share for the contractor while the other four categories of GFP were processed under the heading of Collateral Savings and a contractor share of ten percent of one average or typical year's savings accruing to the government from the VECP.

As part of the same revision to the DAR/ASPR, the rather elaborate charade that had been played with overhaul contractors came to an end. For some period of time, overhaul contractors were promised a future share when and if their VECP was utilized by an in-house (Governmental) repair acitivity, just as though the VECP were utilized in a follow-on contract. The DPC of April 1974 dropped this approach.

The milestone of August 1977 signifies the deletion of the section of the ASPR/DAR that addressed the processing of unsolicited cost reduction proposals. During a period of about 39 months, the regulations outlined the permissible treatment of proposals for reducing costs by an entity of the DoD that had been submitted by a firm that did not have an active contract with the DoD for the supplies or services affected by the proposal. Apparently as a result of the second GRISMAC decision, published 18 May 1977, the entire subject of unsolicited proposals, insofar as they related to value engineering, was completely removed from the regulation. Many observers have felt that the GRISMAC decision was contrary to the best interests of the DoD but the Court of Claims has spoken.

In December of 1980, a shift in DoD policy resulted in the discard of specific instant sharing arrangements to be used in cost incentive and fixed price incentive contracts. With this change to the regulation, such contracts would lump VE results in with the cost management results reflected in the final cost negotiations under the overall cost incentive features of the contract.

In October of 1982, provision for the "no cost change settlement" was included in the regulation for the first time.

The last milestone of the visual, 1 April 1984, is of course the effective date of the FAR. As will be graphically portrayed in the next visual, contracts awarded before 1 April 1984 are to be administered under the DAR. Contracts awarded after that date are to be administered under the FAR. All of the unlucky folks who are charged with administering contracts thus find themselves in the transition period where two sets of references will be needed. A copy of the DAR for the earlier contracts, and a copy of the FAR plus the associated DoD FAR Supplements, etc, for the contracts awarded after 1 April 1984.

FAR/DoD FAR Supplement
Howard Pryor, AFIT

Picture a Saint George type of person in the clutches of an angry looking dragon - I would like to make at least one point with you. In contractual VE, one of the perils that we have our biggest concern about is the unpleasant surprise. Something seems to come up to bite us on a part of our anatomy that is most sensitive and at a time that is most inconvenient. So it seems to be in any of our encounters with the VE clause in contracts. As a result, the Ve clause is consistently viewed as something that is going to cause you a lot of trouble when you already have more than you can count.

Before we discuss the current FAR clause coverage of VE I would like to explore my first visual with you - "A FEW REGULATORY MILESTONES" - The first milestone, 23 March 1978, was the formal changeover from ASPR or Armed Services Procurement Regulation, to the DAR or Defense Acquisition Regulation. As many of you remember, our reference copy of the Regulation continued to be identified on the bottom of each page as ASPR since we were told to expect a complete revision to the DAR to be published by late 1978. A revision that, incidentally never took place.

The second milestone, Spring 1978, was the time when a pronouncement was made that the regulation that would cover all acquisition activity in the Federal Government, namely the FAR or Federal Acquisition Regulation, would be ready for publication by August 1979.

The third milestone, 30 June 1982, was the time of the forecast by the Office of Federal Procurement Policy that the FAR was to be effective by 1 Oct 1983.

The fourth milestone, allowing absolutely no time for sarcasm or other interjections by Monday morning quarterbacks, 1 April 1984, is the point in time when the FAR did in fact become effective.

The fifth milestone, 30 March 1985, is the mandatory completion of a very substantial revision to the FAR called for by the Competition in Contracting Act, Public Law 98-369. This public law that has already been mentioned today is colloquially referred to as "CACA".

The succeeding visual, "A FEW VE MILESTONES" is intended to carry on the message of our existing in a dynamic time continuum. The first milestone, April 1974, a complete overhaul of the regulatory coverage of VE, published in a DPC, dropped a special way of handling VECP savings associated with Government Furnished

Personal Biography

Chris Huffman:

1. Graduated with a Bachelor of Science Degree in Industrial Technology from Fresno State University.

2. Worked at FMC Corporation for 14 years. Was a Manager of Cost/Schedule Control (C/SCSC) for 6 years. Have managed the Value Analysis Department at FMC Corporation Ordnance Division for the last 4 years.

3. A member of the Society of American Value Engineers.

4. Was a guest speaker at ARRCOM Value Engineering Seminar for Contractors.

M1230LB18VA 2

some of the people here. They have implemented both an incentive and mandatory clause within the same contract. That doesn't happen everyday, but they were willing to determine what is necessary to do that to try to give us the incentives to pursue VECPs. They also took the time and effort to request a deviation to the DAR. This deviation was due to the need to provide consideration to FMC for some up-front money that we spent. They used the mandatory program clause and adjusted the share ratios. They have contracted under a support to production contract which is not a typical way of contracting for VE. As it is usually implemented on a production contract. But they funded a support to production contract in an unusual manner.

They implemented reasonable data requirements on the mandatory program clause. They allowed us to combine data items where we had similar items on the basic contract. They didn't keep adding on additional data requirements. They were very reasonable in that area. Also, they funded our subcontractors VE work under the mandatory program clause.

In summary, I think that the VECP process as you've seen today from all of the other presenters is a complicated process. It is not something that happens quickly and easily. It does require some work by all parties. To improve it, its going to require a lot more work from all parties. It's also going to require a lot of good communication, cooperation, and team work. I'd like to leave everybody with the idea, COMMUNICATION and COOPERATION is one of the main threads of the VE fabric. Thank You.

OTHER THAN BY COMPETITION

* SOLE SOURCE
* URGENCY
* MOBILIZATION
* INTERNATIONAL TREATY
* THROUGH ANOTHER AGENCY

OR

COMMERCIAL ITEM FOR RESOLE

* NATIONAL SECURITY
* HCA DETERMINATION

BIO SKETCH

Howard M. Pryor is a Professor of Contracting Management, School of Systems and Logistics, AFIT.

Mr. Pryor flew P-38's during World War II and retired from the USAF as a Lieutenant Colonel.

Mr. Pryor is a past president of Chapter 52, S.W. Ohio, Society of American Value Engineers (SAVE). He is a senior member of SAVE; a senior member of the A.I.I.E.

In the past 22 years he has conducted over 150 VE training sessions for Government personnel.

He serves as a consultant to the Federal Government and to aerospace industry in those areas concerned with contractual aspects of VE.

Mr. Pryor is currently the course director for Contract Administration for Engineers (PPM 307) and for Contractual Aspects of Value Engineering (PPM 306).

Value Engineering Change Proposals (VECPs)
-The Inspector General's (IG) View-
Alan Klein, DoD IG

I'm Al Klein, I'm with the DoD Inspector General's office. Before I ramble into VECPs I thought it may be fair to talk about the IG office. You know the IG bill for DoD came about in the Fall of 1982. As the organization stands today we have five basic divisions. We have a policy division, investigations, inspections, follow-up and auditing. I'm part of the auditing division. There is an Assistant Inspector General heading each of these divisions. Within the auditing division there are about 500 people. There are six directorates. Three are basically called the general business groups. They do the customary type of audit. There is a financial manpower group directorate, there is a system and logistic directorate, and another for intelligence and communications. There are three other directorates which are procurement oriented. There is a contract administration directorate which deals with audits on contracts. There is a major systems acquisition directorate and there is one on major systems. I'm part of the acquisition support directorate. Within our particular directorate there are four groups associated with the Acquisition Management Group headed by a Program Director. I'm a Project Manager reporting to the Program Director. Hopefully that will give you a better idea of what the IG office looks like.

Now we'll go into Value Engineering Change Proposals. We initiated an audit on VECPs based on a request from DLA. We spent about a good month or so doing some survey work. During the survey we review the subject and determine if an audit is justified. Right now we are conducting a verification phase. It's continuing right now. At this time, all I can tell you is basically the status of our review. I hope to get a draft report out sometime in January. I think everybody is interested in the subject. This is an audit of the Management of VE change proposals. It's not an audit of every VECP proposal. It is an audit of management's efficiency and effectiveness regarding Value Engineering Change Proposals. During the survey phase we specifically wanted to determine if VECPs have been evaluated and processed by procuring activities in a timely manner. We have succeeded pretty well in evaluating the reasonableness of Government justification for approval or rejection of VECPs. Along with our auditors we also have support groups including a team of Engineers. As a matter of fact, Jeffery Thompson who heads up our Engineering Support Group accompanies us on many of our visits. Our third objective was to evaluate the validity of claimed savings from VECPs and the resonableness of contractors' share of the savings. To be honest, that was a tough objective. The last objective, which is

really the crux of the whole thing, is to determine the cause for the recent decrease in number and dollar value of VECPs processed by DoD. Why are we not doing better?

In conducting this audit we used a statistical sample basis to review Management of VECPs at selected procurement activities. Based on a random sample of the FY83 VECPs we selected activity and contract administration activities, (DCAS, AFPRO, NAVPRO, etc). Finally, and probably most importantly, we sent questionnaires to selective contractors surveying their knowledge, participation and perceptions on the VECP program.

Now, these are our own results so far. Probably the most important part was visiting contractors in DCAS locations. In some cases more contractors wanted to talk to us than we had time available. Some cases, like Hughes Aircraft, explained how a VE program could be successful and their input is much appreciated. Also, Lynn Cuyler at the Twin Cities DCASMA set up a round table discussion. About six or so contractors provided some worthwhile information on VECPs which really helped support some of the facts and potential resolutions. In visiting the contractors we randomly selected five contractors to visit at each of the selected DCASMAs and also sent out five additional questionnaires. As you see, it was quite an undertaking. My auditors haven't been home in weeks right now. In total we have visited about 112 contractors plus another 100 questionnaires were mailed. Our data base is going to be pretty extensive.

Again, I've been to a lot of these locations and met a lot of people in the audience, and I appreciate all the cooperation you have given me and all the auditors. We were well received by all the contractors. There wasn't one contractor to come in the office and turn down our request for an interview. As a matter of fact, next week, one of the auditors is visiting a contractor who was so interested in discussing VECPs he cancelled his trip to Italy. So again, it shows that there is a lot of interest.

Now here are some tentative observations. They are not presented in any order to show priorities. Some are subsets of others and for the most part they are redundant to what we've heard today, yesterday, and so fourth. First, there is an indication that DoD Management has not adequately emphasized or encouraged the VECP program. We've seen that at many activities.

I was at the Army Symposium earlier this week and they had Mr. Scott there from the Reading, PA DCASMA. He's a hell raiser in getting the job done. As he noted, VECPs are given a low priority within DoD, especially within each of the procurement activities. Typically they have competing job priorities and VECPs take a back seat to other assignments. There is also a poor attitude in some individuals who process VECPs - My boss doesn't care so I don't care. Contractor savings are sometimes viewed like stealing; there's a direct loss. There are cases in which inadequate justification was used to reject VECPs, as well

as cases with inadequate control and reporting. For all the Services that's not a fair statement. The Army does a fairly good job. The DCAS does a reasonably good job. We've heard of horror stories on the way. The guys at the bottom didn't know what was going on. Contractors really interested in the program received little encouragement; sometimes, the contrary. They want to save money but they are really discouraged from participating.'

Now there are two other issues which have been addressed this morning. One is the lack of up-front funding. Currently, the program discriminates against small companies. They have a hard time coming up with any kind of funds. If they have VEPs which required up-front funding for testing or analysis, they get discouraged at the outset. When you're dealing with small quantities of important items like Aircrafts, you require a certain amount of testing, and it's expensive. Sometimes you can't get a payback in a three year period. It's only fair to take a look and see if remedies are available. Right now I'd like to answer any questions.

I noticed that you and your auditors emphasized VECPs. VEPs are also a cost saving. In one sense if your have a 25-50 percent savings on a VECP worth five million dollars the contractor would get quite a bit. If the same proposal came from in-house the contract price would be reduced by $5M. The savings to the Government would be $4 million nine hundred ninety-nine thousand less an insignificant amount. Now, why is there not more emphasis in that direction? Is there some way of saving some of the money? To channel it into a saving bank for up-front funding?

First of all, when we first researched the VE area, we did not select VEPs or VECPs. We looked at the in-house program for a while but decided to audit VECPs first. I'm not sure what will be done on VEPs, so I really can't answer that question right now.

1984 DoD Value Engineering Conference

Closing Remarks

Dr. Richard A. Stimson, Director
OUSDRE(AM)/Industrial Productivity

I suppose you all want to know what the bottom line is. What's going to happen to all these recommendations. The Value Engineering Committee, I think all of you know there is a DoD VE Committee, is chaired by Gordon Frank with representatives from each of the Services and meets periodically to work on these overall problems. They are going to be looking at each one of these recommendations and determining what can be done in the short term, long term, and so forth. I would like to say one word of caution, having been in the Government for close to thirty years, I have never seen too many things happen overnight. The way you make changes in Government is an evolutionary not a revolutionary process and therefore, you must have tenacity and you must keep the pressure up to affect change. So from that view point, this conference is the beginning and not an end. I am sure the next time we all meet we will be able to point with pride to some changes that have been effective, but we will need many more conferences and much more effort like we have shown today in order to get all the benefits and all the changes that we desire.

I would like to characterize what I have observed here the last two days as creative dissatisfaction. Creative dissatisfaction is a prerequisite for change. It is a positive effort towards change. Now I like to call it that because there is always a danger when you meet and talk about all the problems that you forget about all the accomplishments that all of you have been able to develop during the past few years. You should feel a sense of pride in what you have done so far and pride in what you are going to do when you leave here. I can sense a new spirit rising out of this conference. Go forth and maintain this spirit. I hereby call this conference to a close. Thank you very much.

DR. RICHARD A. STIMSON

Dr. Stimson is the Director of the Industrial Productivity Office within the Office of the Under Secretary of Defense (Research and Engineering). The purpose of the Industrial Productivity Office is to establish policy and act as a focal point and proponent for the broad range of issues fostering increased productivity of defense contractors. Several areas of responsibility are: Industrial Modernization Incentives Program (IMIP), Quality, Value Engineering, Design-to-Cost, and Tailoring of Contract Requirements.

He participated in the White House Conference on Productivity as a member of the computer conference investigating Quality, and is the moderator of an on-going computer conference entitled, "Defense Industries Productivity and Quality Conference." He is also a member of the ASTM Committee on "Research and Technical Planning."

Dr. Stimson's prior employment has been with the General Motors Corporation, Navy (Officer), Air Force, DLA, and FDA. He is also a Senior Instructor at George Mason University.

He holds a Bachelor's Degree in Engineering from the University of Cincinnati, and a MBA and PhD from Ohio State University in Business Administration.

DEPARTMENT OF DEFENSE
PRODUCT ENGINEERING SERVICES OFFICE
C/O DEFENSE LOGISTICS AGENCY
CAMERON STATION
ALEXANDRIA, VIRGINIA 22314

IN REPLY REFER TO

1984 DOD VALUE ENGINEERING CONFERENCE CRITIQUE

Your comments are requested to evaluate the overall success of this conference and to help us plan similar future activities. Please leave this completed form at the registration desk before you depart the Xerox Training Center.

Please circle the appropriate response to questions 1 through 5 and answer questions 6 through 9. Use the back of this sheet for any additional comments.

1. In which workshop did you participate? A B C D E

2. Your workshop emphasized major issues:

Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree

3. Workable solutions were proposed:

Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree

4. Your workshop was effective:

Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree

5. The conference facilities were suitable:

Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree

6. What aspects of the conference were particularly noteworthy?

7. What aspects of the conference should be changed?

8. What topics should be added to or deleted from similar future events?

9. Please rate the conference on an overall basis.

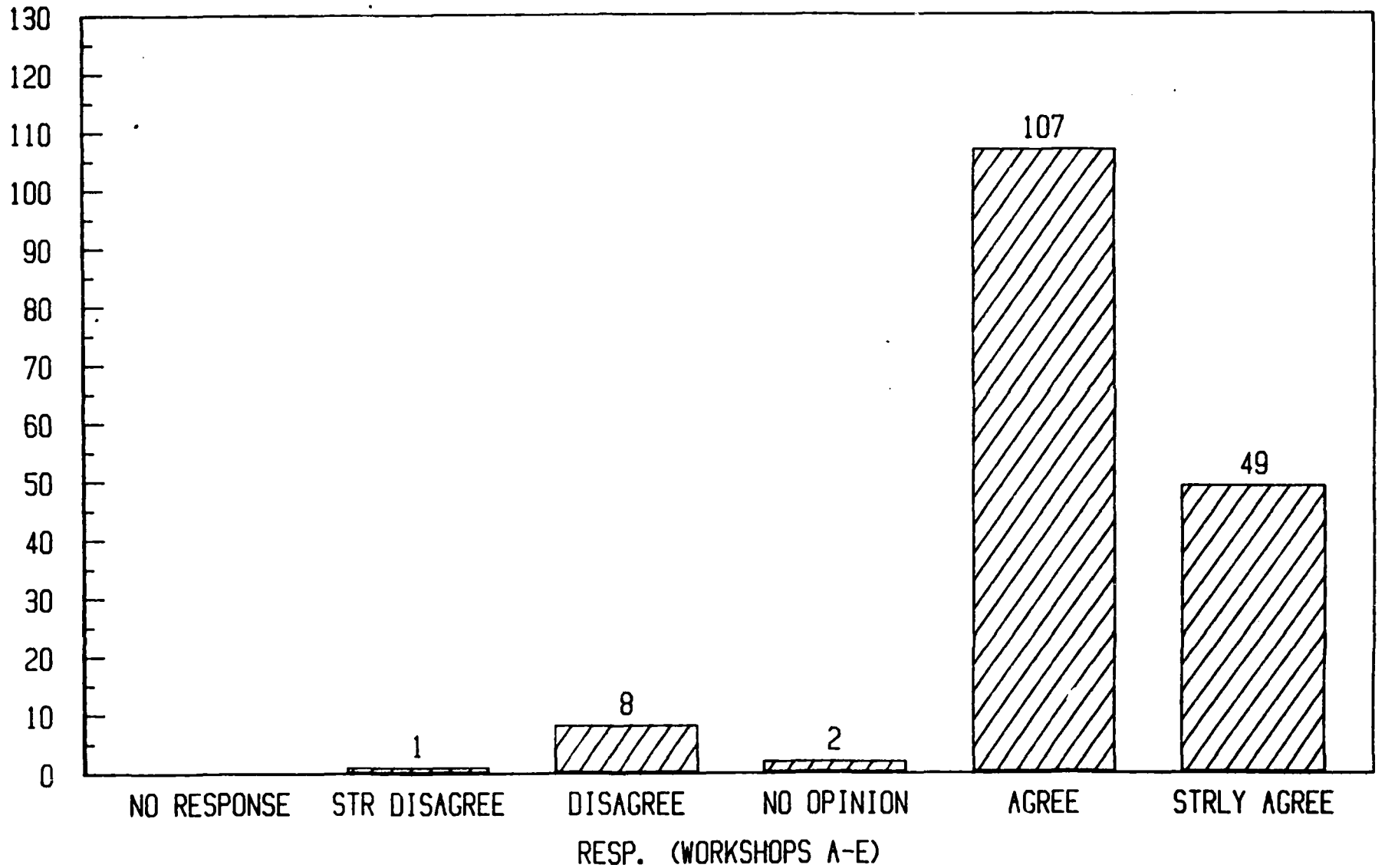
Optional:

Name/Title	Organization	Telephone No.

(VE Conference)

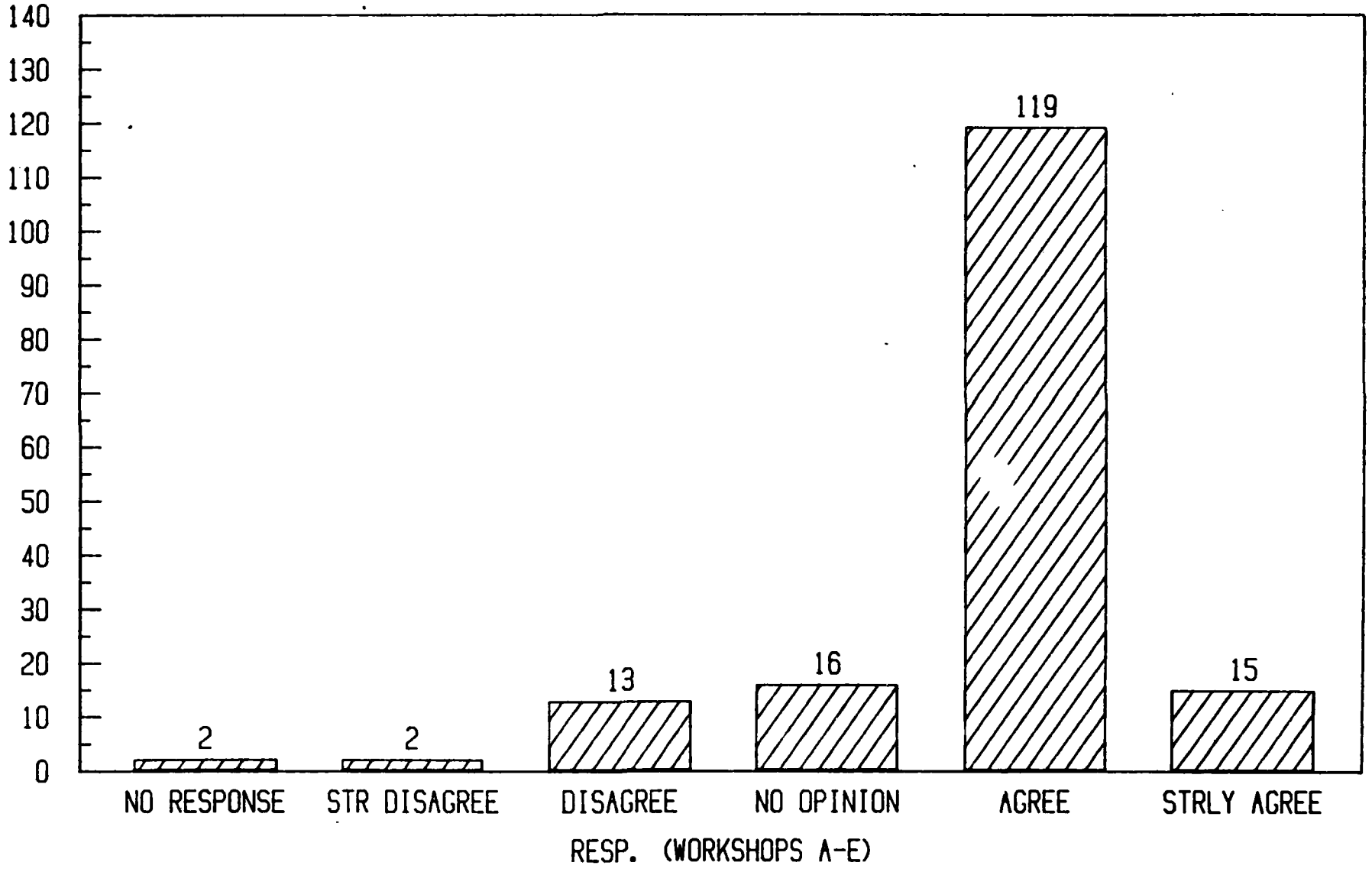
VE CONF. CRITIQUE - QUESTION 2

"YOUR WORKSHOP EMPHASIZED MAJOR ISSUES"



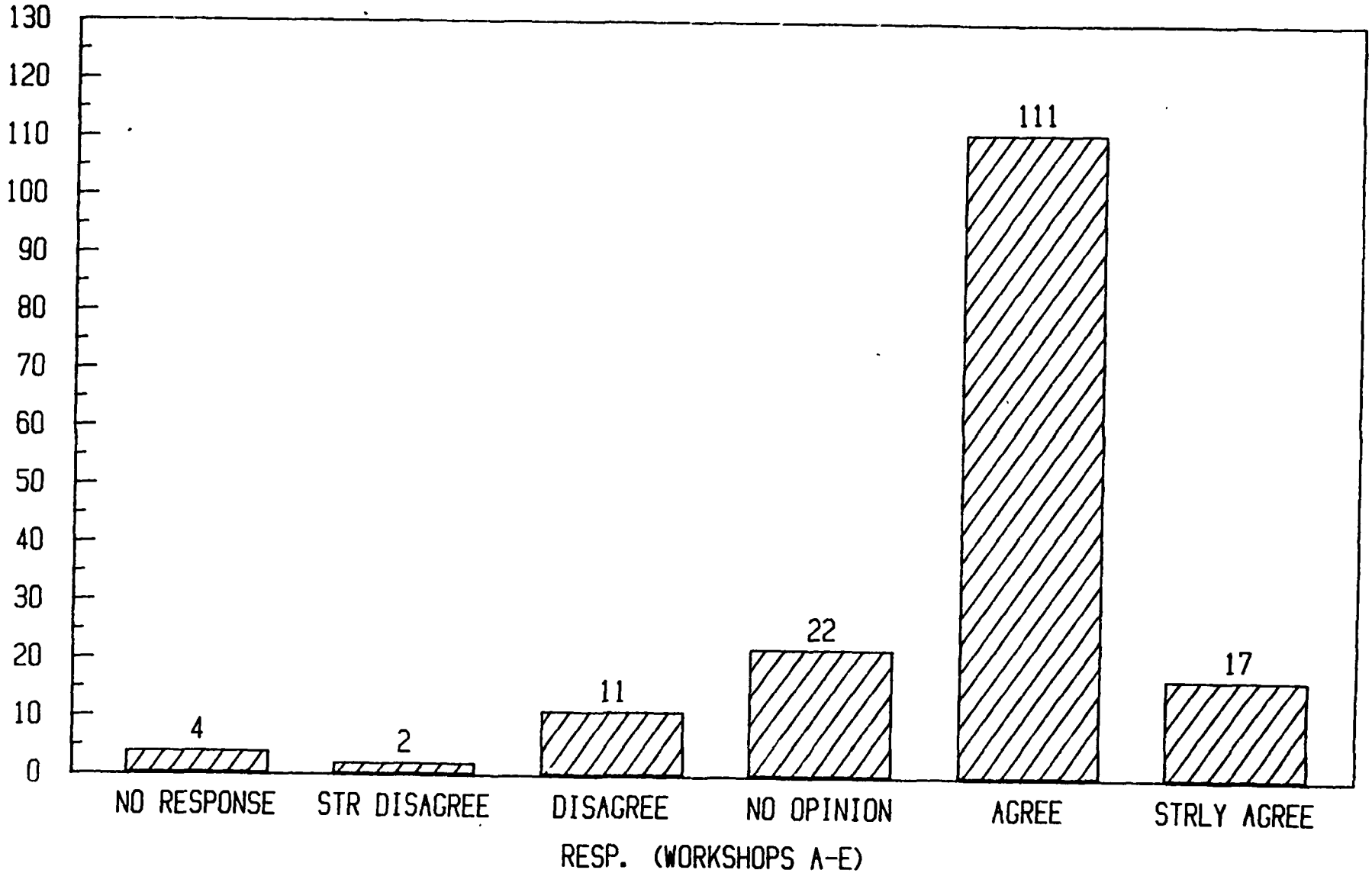
VE CONF. CRITIQUE - QUESTION 3

"WORKABLE SOLUTIONS WERE PROPOSED"



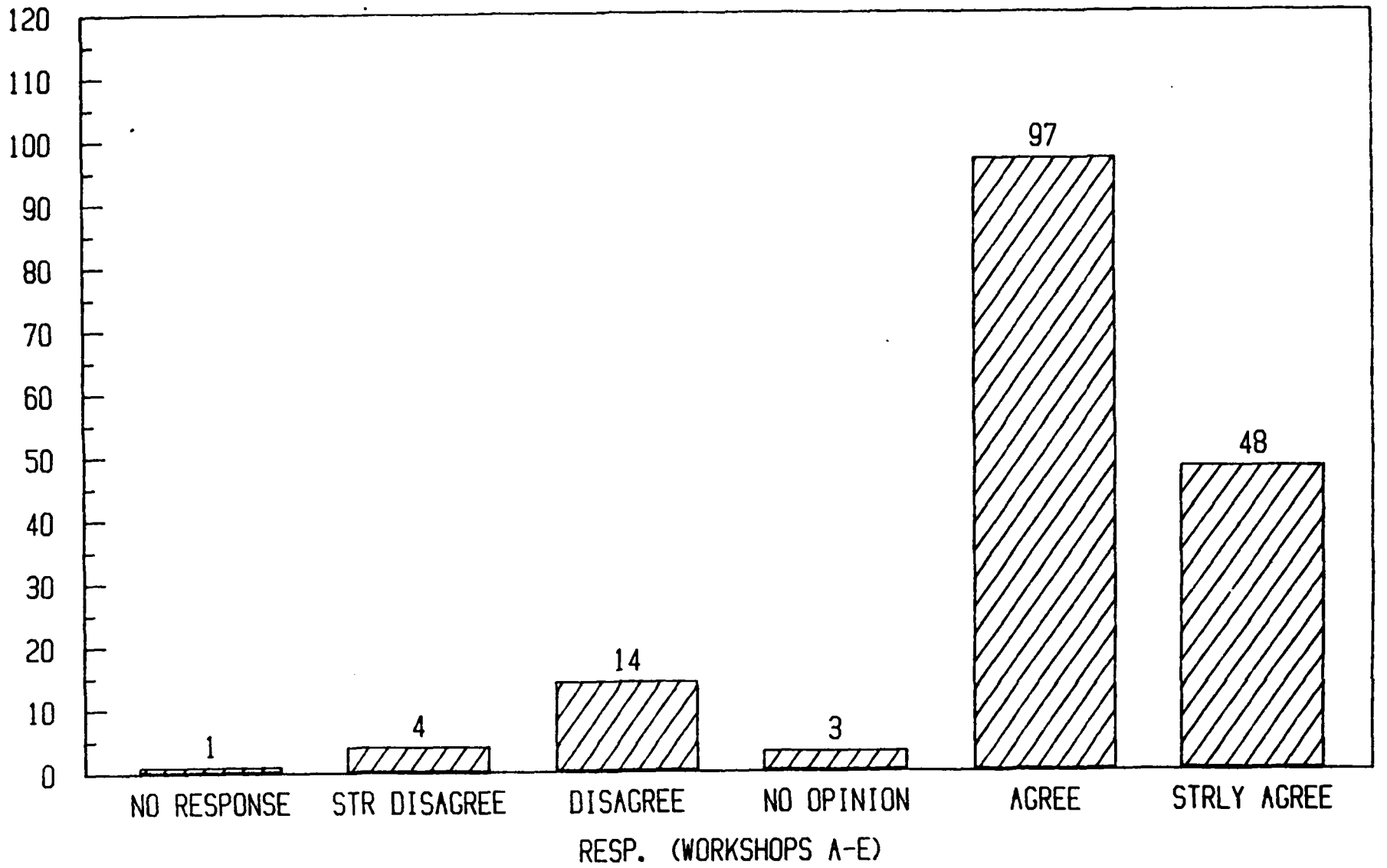
VE CONF. CRITIQUE - QUESTION 4

"YOUR WORKSHOP WAS EFFECTIVE"



VE CONF. CRITIQUE - QUESTION 5

"THE CONF. FACILITIES WERE SUITABLE"



COLLATERAL SAVINGS – THE REAL CHALLENGE

William H. Copperman, BS, MBA, JD
Manager of Value Engineering
Hughes Aircraft Company
Los Angeles, California

ABSTRACT

This paper describes one approach by which a Contractor met the challenge of sharing in collateral savings resulting from Value Engineering Change Proposals (VECPs) submitted to the Government. The objective was accomplished through Life Cycle Cost computer modeling, which demonstrates the cost impact of individual VECPs over the life cycle of a program.

Introduction

There is little incentive for contractors to spend resources for Value Engineering (VE) collateral effort, because of the lack of immediate, visible benefits. Couple this with the prospect of little or no return on investment and little or no chance of VECPs being approved when submitted, and the result is no collateral effort. The Government's resistance to approving collateral savings stems from a two-fold problem; first, to immediately award contractors for savings which do not occur until out-years rankles contracting officers. This is especially true when budgets have never been established for such savings. Second, documenting the savings so that they can bear internal audit is a very difficult task. As a result of these negative forces, contractors do not bother with collateral savings and contracting officers do not approve VECPs for collateral savings. Unfortunately, little VE effort is expended when the greatest gains in collateral savings could be achieved.

Thus, we face the problem of collateral savings.

The Life Cycle of a System

Whenever we consider the life cycle of a system, we should include all costs incident to research, development, production, operation, and maintenance. As we know, VE is applied at any point in the life cycle, that is, when it's profitable to do so.

Given this, we still find that, throughout the different Government agencies, individuals hold entirely different definitions and concepts as to what or where certain elements fit into the "life cycle."

It is apparent that a much better understanding of life cycle phasing is required before any discussions of collateral can begin. We must first look at what cost means to the contractor and to the Government before we look at the phases of a life cycle.

Cost is the total funds required to acquire and utilize a specific function. For the contractor (the seller), this is the total of his expenditures for his particular product. For the Government (the buyer), the total cost of acquisition and ownership includes not only the purchase price of the particular product but also the costs of developing it, introducing it into the Government's inventory, operating it, and supporting it throughout its usable life. The Government's total cost of ownership also includes a proportionate share of expenditures for engineering, testing, spare parts, and various categories of overhead expense.

The phases of life cycle consist primarily of three major categories: conceptual, development, and production and deployment. Depending on what Government agency you might be dealing with, you would undoubtedly get a different set of major categories, phases, or cost breakouts. *Figure 1* tries to place most of these differences on one chart. Notice that the "Life Cycle Costs" bar is not the same as the Life Cycle of a System. For design-to-cost modeling or life-cycle-cost modeling, the life cycle cost could include the advanced development portion and, therefore, is shown to start before most other definitions.

The first phase, *the conceptual phase*, develops a clear definition of the mission performance characteristics and system operational requirements. It is during this phase that the value trained engineer contributes to the most economical decisions resulting in large cost reductions. The completion of this phase answers the question: Is the system feasibly consistent with mission and performance objectives?

The second phase, *the development phase*, answers the question of whether the conditional decisions made during the conceptual phase should proceed toward a firm design. Here, engineering determines that an achievable performance specification (backed by a firm fixed price or other fully structured incentive proposal) can be reached during the last phase. During this second phase, the value engineer should formulate a VE program, which could be expected to result in substantial reductions in total cost. It is during this phase also, that the most opportunities arise to question performance characteristics and revise them when necessary.

ıe last phase consists of two subcategories, production and ployment.

ıring the *production phase*, sometimes considered the Procure- ent and Production phase (P&P), the value engineer has the eatest opportunity to do VE. Large amounts of money are ımmitted, the design requirement baselines are established, and eliminary Design Reviews (PDRs) are required.

ıe *deployment phase* is the second subcategory. This category cludes the cost of maintenance and other logistics costs. It is this category where the majority of the Government's cost of vnership rests. Extremely large savings often justify the investment of VE funds although there are usually high attendant implementation expenses. But here is where we see the greatest resistance to VE by both the contractor and Government agencies.

It is absolutely essential for achieving the greatest economic improvements to have the most enthusiastic acceptance of VE within the contractor's facility and a very receptive attitude toward VECPs within the Government. When both exist, a successful VE program will result.

Figure 2 illustrates how early VE activity has the greatest cost reduction potential with the corresponding lowest cost for implementation.

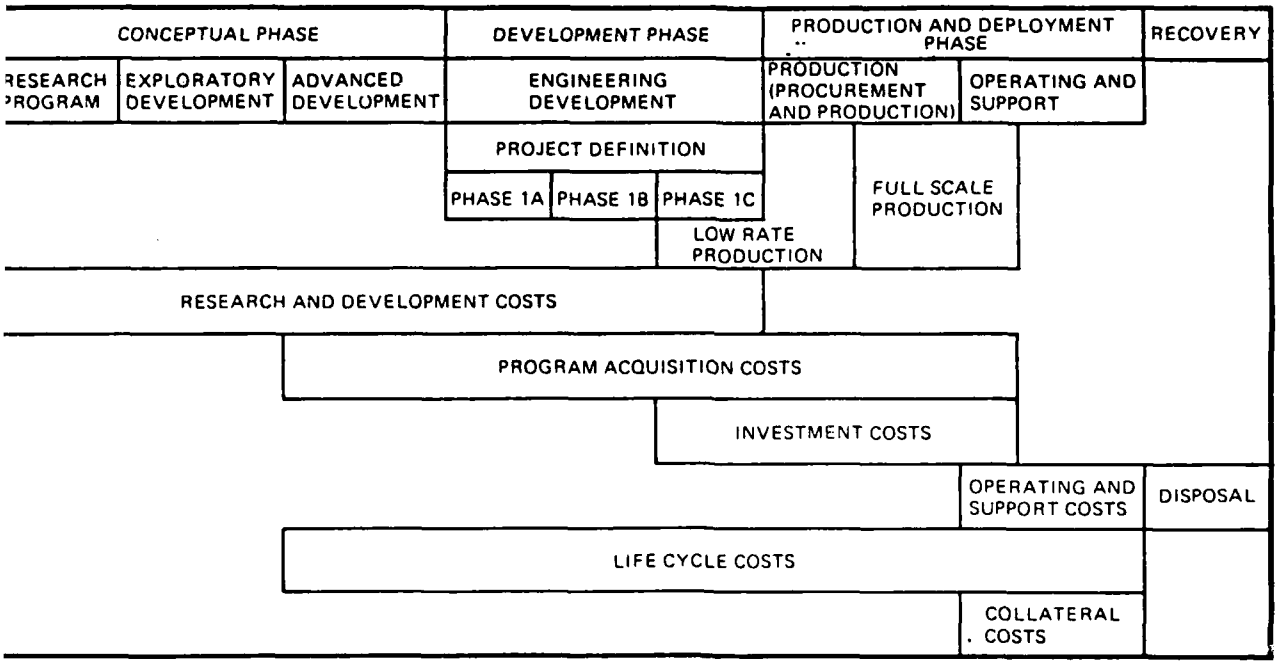
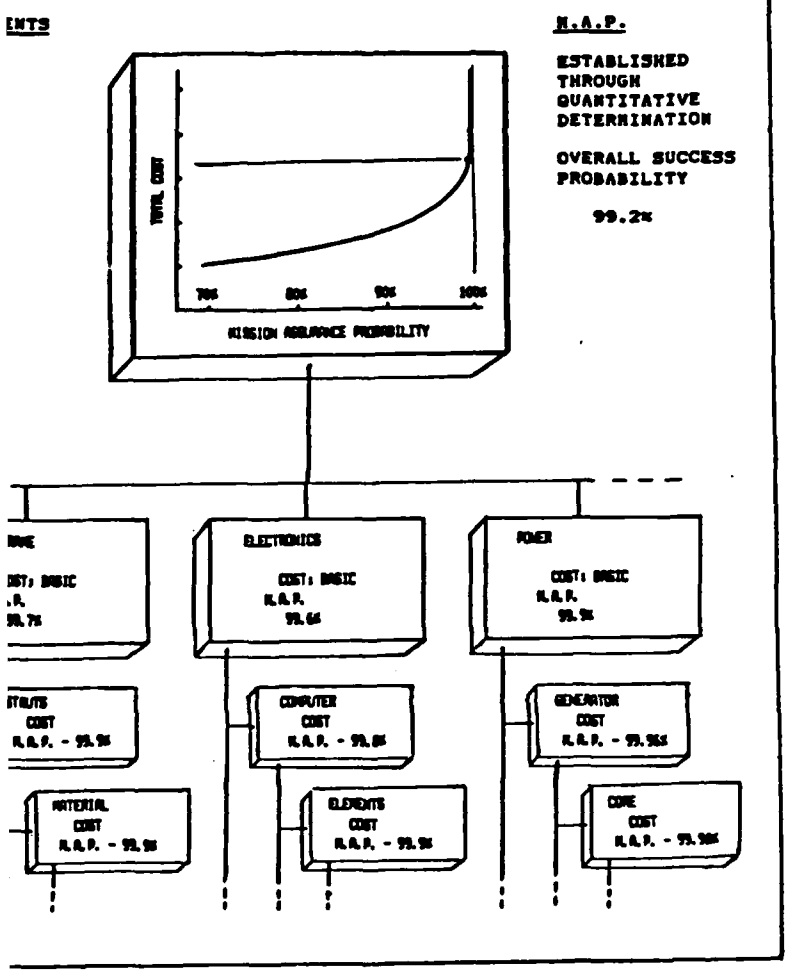


Figure 1. The Life Cycle of a System

RE 3B HERE'S THE MAP!



'LICATIONS

lo everything on everything iously be impractical. Also not necessary to analyze l in detail, but it is to consider in some form sible eventuality. For all few program elements, the s are such that there is eed for any more than a consideration of the ty. It can be intuitively d that the existing ties can be handled by the ability included (margin) and erally is ample experience to idence that these values are resentative.

THE "HORSESHOE NAIL" CAN BE OVERLOOKED !

Salient elements of Assurance must be reviewed systematically and the critical areas resolved completely as is accomplished through the Decision Technology process.

An excellent mechanism for systematically screening the planned or existing situations is the new DoD Directive 4245.7 "Transition from Development to Production"(2.) which provides critical path Templates to isolate specific areas of consideration. Again, in most cases, these areas can be handled intuitively, but when there are extenuating circumstances, outside pressures, weak communications, complex issues, limited capabilities and/or critical consequences, the formal application of Decision Technology can provide the added precision, sensitivity and visibility needed to develop efficient and acceptable decisions.

Likewise, DoD Directive 5000.2 "Major System Acquisition Procedure" calls for the review of specific accomplishment characteristics which are generally recognized as being necessary to know prior to building on them in subsequent program phases. Decision Technology provides the information on the degree of achieved assurance and cost that the DSARC review process seeks. The information is presented in a form which can be used to satisfy the intent of these toll-gate reviews.

The basic logic and format of the Decision Technology methodology can help to provide an efficient and uniform method of addressing all issues. As everyone knows, there are no such things as absolute answers, but the current process of finding out the viability of a decision through actual experience can range from insignificant through unacceptable to catastrophic. For instance, you wouldn't want to perform a trial operation, possibly risking a major powerplant failure, without knowing and understanding the risk values of operation ahead of time. When severe costs of consequences are likely to result, the quantitative probability of this should be known in advance if possible and corrective action taken if necessary. It might be like considering the situation of driving 20 feet behind a car on the turnpike at 60 mph and an accident hasn't occurred yet! There is enough tension developed from the recognized risk that the conditions should be changed before the inevitable happens.

It has been found in the application of the Decision Technology process that for almost every failure, when the causes were identified, there

documented operational
ilities and limitations,
reduction of failures by
1 and up to 100 to 1 or

savings- 10's of thousands,
of thousands, millions and
10's of millions or more.

savings- hours, days, weeks
nths.

of involvement- one item,
le-shooting, point-in-time
, project phase and
ing to end for a complete
system project.

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rom the previous experience
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to be used to attain them.
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y the probability of the
approaches successfully
he planned objective.
identifies the effects on
probability resulting from
changes in the existing
and is able to precisely
e changes with their
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atistical Management Chart
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Mission Assurance
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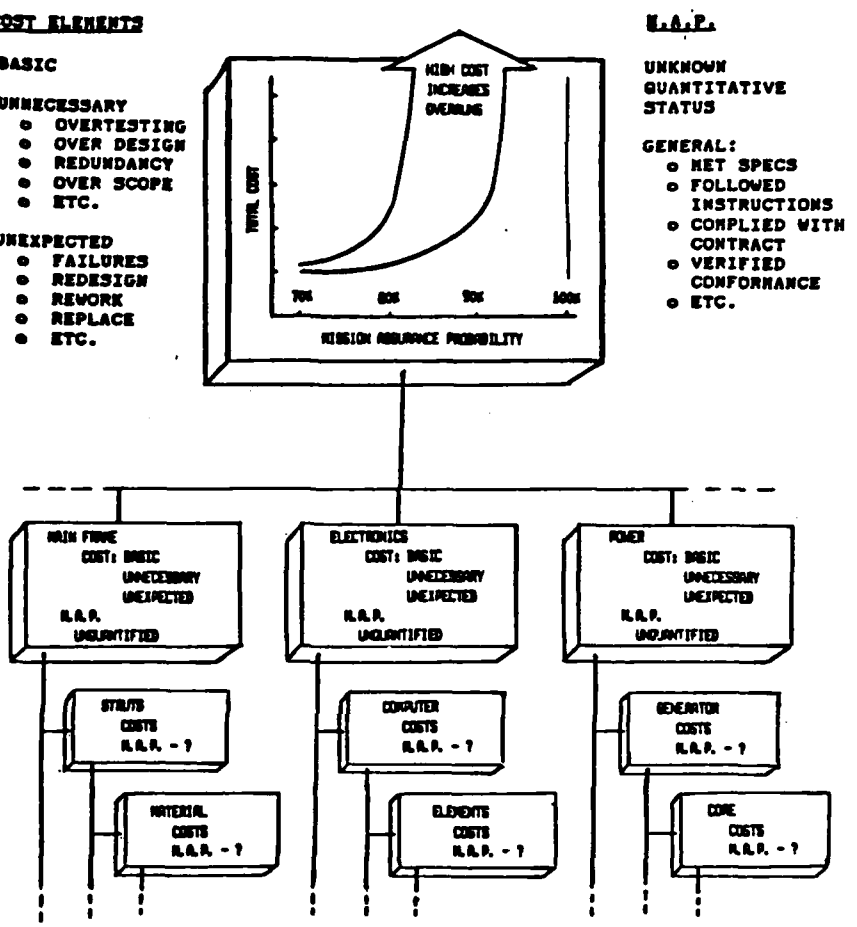
s and clarity. When effort
properly,

ON PROBABILITY SUCCESS SHOULD EASE WITH COST.

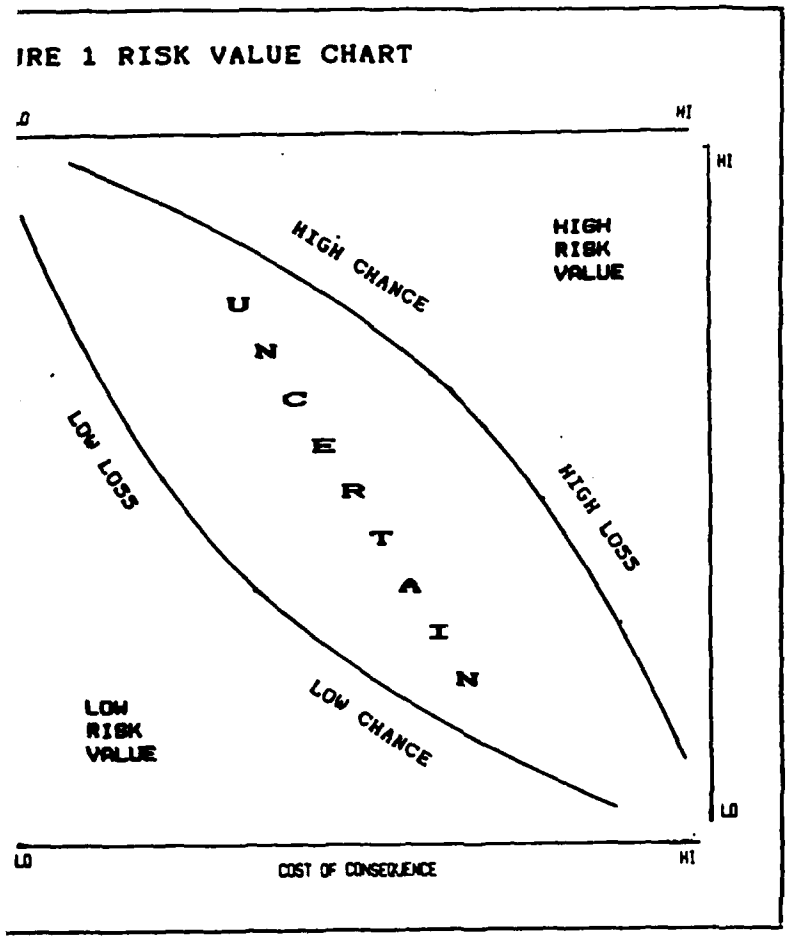
oint 1, there is inadequate
high risk value boundary)
oint 3, there is unwarranted
ow risk value boundary).
favorable condition for a

FIGURE 3A WHERE'S THE MAP?



decision (refined design) is at Point 2, a point which can be identified by many names, such as, Best Value, "knee of the curve", point of diminishing returns, optimum balance of value and cost, etc. The assurance levels along the curve are substantiated by the detailed description of what is required from each contributor to achieve them.

A comparison of the Assurance/Cost expectations and results with and without using Decision Technology is shown in Figures 3A and 3B. In this case, the managerial objective of controlling cost is emphasized by having cost on the ordinate. Without Decision Technology, costs can ramble and compound and performance difficulties can emerge from many areas as indicated in Figure 3A. This can lead to inflated and high costs along with unknown and unacceptable quality of performance leading one to ask, "Where's the MAP?". On the other hand, with the Decision Technology MAP as shown in Figure 3B, the contributed value to Mission Assurance Probability of each activity is known and selected to achieve desired results, and cost is controlled through knowing the cost of the activities. In addition, the Decision Technology process provides an excellent opportunity for potential deleterious effects to surface and be handled before they can cause the performance and cost problems that are so familiar today.



4. ACCOMPLISHMENTS

The scope and versatility of the process can be shown through the description of the characteristics that have been associated with the applications already accomplished. Maybe there are some conditions or desires in the following list which relate to your areas of interest:

1. Hardware levels- materials, parts, components, subassemblies, systems and weapon systems or overall projects.

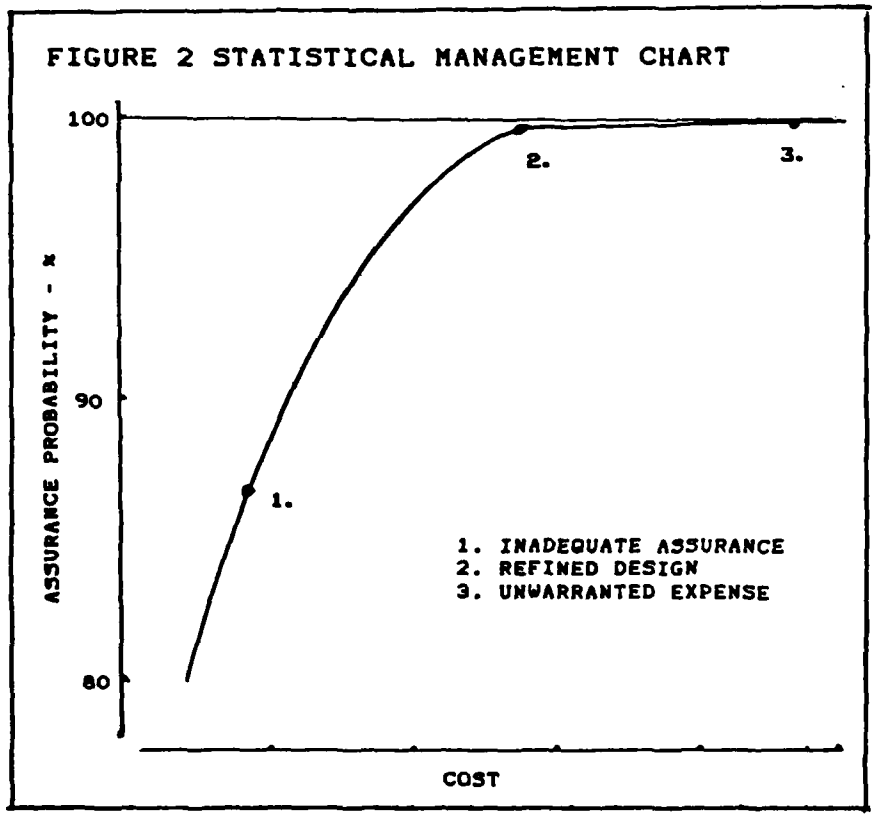
2. Functional systems- mission requirements, manufacturing procedures, process control, quality control, assembly, design, screen testing and verification testing.

3. Project phase- scientific research, concept development, hardware development, production, operations and phase out.

4. Performance quality enhancement- increased operational capabili-

good news is that :ation is not only possible vailable through the Decision gy methodology. Required ecessarily used but not documented in project data is processed through unique techniques and provides e determinations in a useful actured form. Whether the ed assurance levels are 20%, 99.99+%, when they are d in the Decision Technology with the source backup ion, they are both completely d and readily accepted.

bad news is that even though Technology has been proven to :tive in over 80 applications, y it is not being effectively :ed to help control the me aspects of the National cquisition Program.



hich to apply their talents
vely, results have been far
than might be expected.

en the root cause of failure is
ely exposed, it often only
s simple Common Sense to pro-
better decision. Today's less
pected performance and higher
xpected expenditures, coupled
vious after-the-fact identified
would lead one to ask,

AT EVER HAPPENED COMMON SENSE ?"

oking at Scientific Progress,
ful application of most
ogies comes from the intro-
of accurate numbers to sound
s. The same must occur for
Sense to triumph. It must be
fically generated with accurate
and by qualified people. Lack
bers, wrong numbers, or even
numbers misinterpreted can
a concept or plan regardless of
uch Common Sense it makes.
can generalize where they are
some better than others, but on
sk, high consequence endeavors
t it be advantageous to have a
quantitative MAP to provide
sibility for identifying the
sk and non-contributing areas
they jeopardize success and/or
cost?

e philosophy of the MAP is to
the decision makers with a
ative understanding of the
utions or effects of all
d considerations, putting them
best position possible for
the decisions necessary to
the desired results. These
ications are in the form of the
lity or assurance of achieving
efined objective and they
y relate with all of those
rations a decision maker must
th.

tance:

at is the effect of the design
rgin being reduced by 4.5% to
low a less expensive material
to be used?

- What amount of control does it take to achieve a 99.76% probability for system operational success?

- How much extra assurance and what kind is obtained by running 10 tests instead of 3?

- What performance measurement is needed, at what phase and under what conditions to best verify system acceptability?

- What verification and control functions can be reduced or eliminated and still have the system meet its assurance objective?

When the decision makers are provided with the quantitative answers to these and many similar questions, they will have the information and support needed to make and carry out proper decisions.

"WHY IS IT IMPOSSIBLE TO REASONABLY ESTIMATE THESE ASSURANCE AMOUNTS ?"

This becomes evident when it is realized that the amount of ASSURANCE existing equates to a constant which is raised to a variable exponential power. The numerical value of this exponential power is determined by the sizes of the existing uncertainty and margin plus another factor which itself results from an exponential power reflecting the quantity of experience existing. Since controlling uncertainty, margin and experience is what achieves ASSURANCE, it follows that the amount of assurance produced can not be accurately determined without using an equation. When the luxury exists for including excess margin, providing inordinate control of uncertainty and including superfluous testing, and all are done simultaneously, this may provide an unknown high level of assurance. However, experience has shown that the actual assurance existing can vary between 20% and 99+% when any or all of these three elements are modified for project efficiency. This ambiguity about the amount of assurance existing can and does allow intolerable consequences to occur.

3. MECHANISM

When a situation is approached for making a decision, the logic is to rule out the extremes and then concentrate on those areas where the capabilities exist to precisely control the influences having the major effect on the successful outcome of the decision. This can be illustrated on the Decision Technology Risk Value Chart shown in Figure 1.

Risk Value has two components, the probability of a failure occurring and the cost of the consequence if the failure does occur. Looking at the chart, it can be seen that if the probability of failure is low and the cost of consequence is low or insignificant, there is a Low Risk Value and a decision is easy - DO IT! Conversely, if the probability of failure is high and the cost of the consequence is high or extreme, there is a High Risk Value and the decision is equally easy - DON'T DO IT!

IN THE INBETWEEN ZONE, DECISIONS ARE UNCERTAIN !

These uncertain decisions usually are critical and tend to consume the major effort and expense of any endeavor. Consider the type of decisions you are called upon to make. Don't you find the troublesome ones would fall in the central uncertain area?

Obviously, all managers would like to have the quantified assurance probabilities of successful performance in this uncertain area. It would enable them to avoid the risks that lead to failure and cost overrun headlines. Unfortunately, very few managers realize that such a quantification can be achieved.

WHERE'S THE MAP?

The way to control acquisition cost is to control the Mission Assurance Probability ("The MAP"). Decision Technology (1.) provides the information needed to make correct decisions with confidence.

Roland P. Swank

INTRODUCTION

s stated by many Congressmen and ment of Defense Officials: "High cost overruns, poor quality mance and degraded results are ng today's weapon systems and it to be getting worse." Why do acquisitions turn into such es?

HERE IS A REASON AND A SOLUTION.

ific Progress has invaded all of life making it necessary to ly address the technical cause ffect details. It is not le to design a bridge, a aper or an airplane without the f equations. The particular als used, their condition, size shape must be specifically ined and any source of potential must be analyzed to determine how it is to be controlled or whether it is to be used at all.

Are decisions any different? Don't they represent the sensitive integration of many factors such as user intentions, requirements, technology capabilities, technology applications, producing methods, control procedures and results verification? It seems only logical, in order for effective decisions to be made, that detailed contributions and effects of each source influencing the final outcome should be known. Then, as with technical equations, the "decision equation" can be used to determine just what is actually needed, and how much, to accomplish the desired result within the constraints of time and cost.

2. PHILOSOPHY

How many times have we looked back on those things which caused high costs, cost overruns, poor quality performance and/or degraded results and realized they could have been avoided if different decisions had been made? How many coaches, after the game, have muttered, "If only ..."? Since this is unfortunately an all too common syndrome, it makes one wonder why suffering the painful results of inadequate decisions is necessary. Wouldn't it be better to recognize the potential results beforehand and modify the approach to avoid difficulties?

THE MAP (MISSION ASSURANCE PROBABILITY) CAN PREDICT THE SUCCESS OF DECISIONS AND SHOW THE CONSEQUENCES OF GOING ASTRAY.

Like a road map, from which you locate your destination and plan the route to get there, a Decision MAP shows where each alternative action, activity, task and function leads, thus allowing you, as the decision maker, to find the best (low cost) route to your destination and avoid (failures) getting lost.

Weapon system acquisitions, in many instances, have fallen far short of desires and it only seems natural that those who have managerial responsibility should receive the blame. But if one considers the functional restraints, the highly complex environment, and the imprecision of communications, decision makers have been doing a superb job under the severest of handicaps. Without using a sophisticated tool

he author is Vice President of d Common Sense, Inc. of Paoli, has 34 years experience in ace systems analysis, the last ars of which were spent in ping and applying Decision logy principles.

SUMMARY

Collateral runs a "dead last" on the government's priority list of things to do. Couple this with the fact that expenditures of "up front" costs must be paid by the purchasing activity for unprogrammed operations and maintenance (O&M) dollars and are never redeemed by the purchases but realized as savings by the user (in reduced maintenance costs). This results in deterrents by buying activities in accepting VECPs whether for collateral savings only, or in conjunction with acquisition savings.

The contractor has the burden of proof for collateral savings. His efforts required to prove collateral savings are greater than the awards given. This acts to discourage any active participation and results in lost VECPs.

RECOMMENDATIONS

- ***Publicize***

  Publicize to the highest echelons of the Government through letters, bulletins, and articles the need for collateral savings in the O&M period (not just lip service).

- ***Computerize***

  Impose an Office of Secretary of Defense (OSD) collateral cost model. This model, once developed, should be used and maintained by all agencies, either as a directive or guide. (A military standard would be ideal.)

- ***Budgetize***

  Establish a budget in the planning stages as part of every program for the payment to contractors for collateral savings. This will allow for front-end costs to be available to the purchasing activities when needed.

- ***Definitize***

  Define a typical year's savings to allow for a more accurate portrayal of real-life situations.

- ***Incentivize***

  Incentivize contractors with a higher share of the savings. This will create a desire by contractors to spend time and effort in reducing the high O&M costs.

Sample Calculation

A sample calculation of both the acquisition and collateral savings is shown in *Table I:*

1) The acquisition savings from a VECP which had a Unit Cost Reduction (UCR) of $50,000 and a total savings over 285 fire units is $14,250,000.

2) The collateral savings from the modeling exercise was based on the reduction in parts, fewer corrective maintenance actions, lower transportation and packaging costs, and about 15 more O&M cost reducers as shown in the Figure 6 report format. The model shows a total O&M savings of $10,350,000 over the 10-year deployment life. Fifty percent of the average year ($900,000) is the contractor's share of $450,000. The total contractor's share is divided by 167 fire units. This number, $2,695 is called the Unit Collateral Savings (UCS).

3) The Instant Contract award is based on the UCR of $25,000 times 27 fire units equals $675,000. In addition, the UCS of $2,695 times 27 FUs equals $72,765. When you add the Government's share of $675,000, the total Instant Contract savings is $1,422,765.

4) The future payments are figured the same as the Instant Contract to the agreed number of FUs. In this case, the acquisition balance is 258 FUs and the collateral balance is 140 FUs. The remaining savings to be shared by the contractor and the Government equals $16,349,935.

5) The total life cycle savings for this VECP (contractor and Government share) during the Instant and Future contracts is $24,600,000.

TABLE I. SAMPLE CALCULATION OF COLLATERAL SAVINGS

(1) ACQUISITION SAVINGS

Original Cost of Unit	$ 250,000
Redesigned Cost of Unit	200,000
Unit Cost Reduction	$ 50,000
Contractor's Portion (50 percent)	$ 25,000
Total Savings for 285 Fire Units	$14,250,000

(2) COLLATERAL SAVINGS

Modeling Estimate of Savings for Program Life (Program Life 10 years)	$10,350,000
Savings for Average Year	$ 900,000
Contractor's Portion	$ 450,000
Per Unit Payment for 167 Fire Units	$ 2,695

(3) INSTANT CONTRACT AWARD
(27 Fire Units Awarded)

Acquisition Savings	
Contractor's	$ 675,000
Government's	675,000
Total Acquisition Savings	$ 1,350,000
Collateral Savings	
Contractor's	$ 72,765
Government's	—0—
Total Collateral Savings	$ 72,765
Total Instant Contract	$ 1,422,765

(4) FUTURE PAYMENTS

Contractor's Share	
Acquisition (258 Fire Units/25,000)	$ 6,450,000
Collateral (140 Fire Units/2,695)	377,300
Total Contractor's Share	$ 6,827,300
Government's Share	
Acquisition	$ 6,450,000
Collateral	9,899,935
Total Government's Share	$16,349,935

(5) TOTAL LIFE CYCLE COST SAVINGS

	Contractor	Government
Instant Contract Savings	$ 747,765	$ 675,000
Future Savings	$ 6,827,300	$16,349,935
Total Savings	$7,575,065	$17,024,935

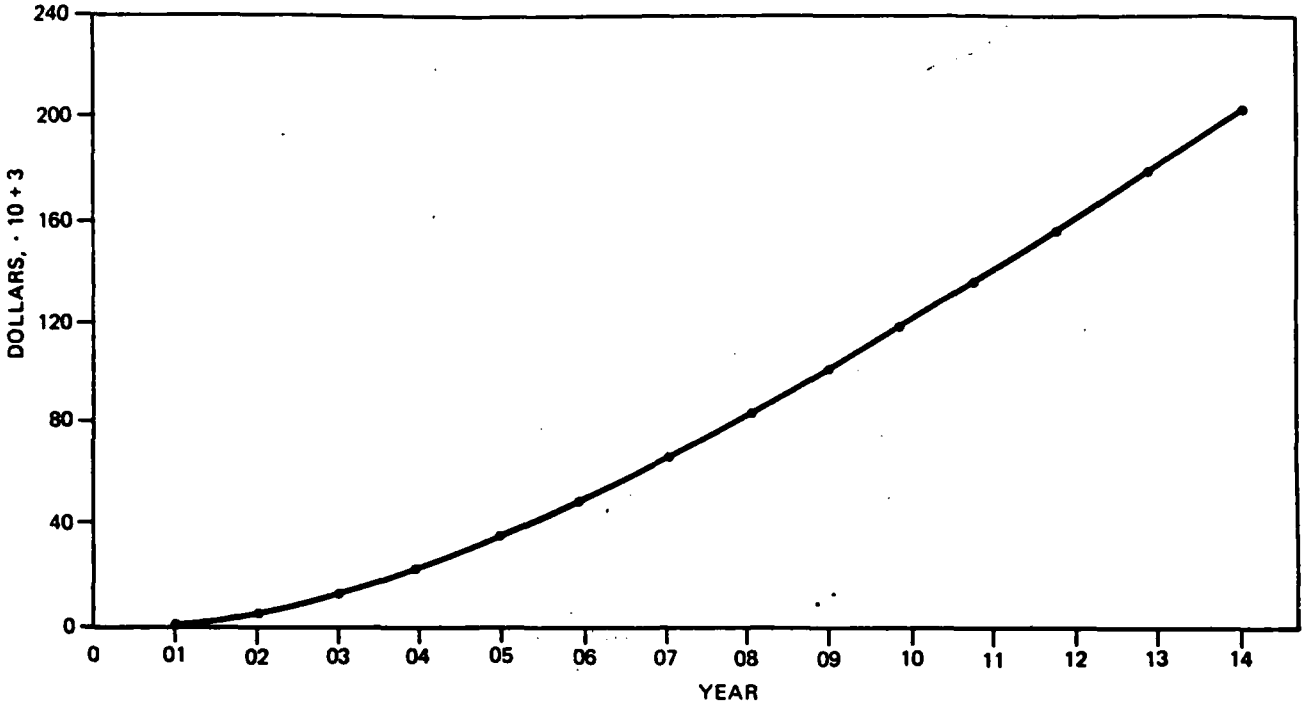


Figure 7. Sample Projection Cumulative Savings

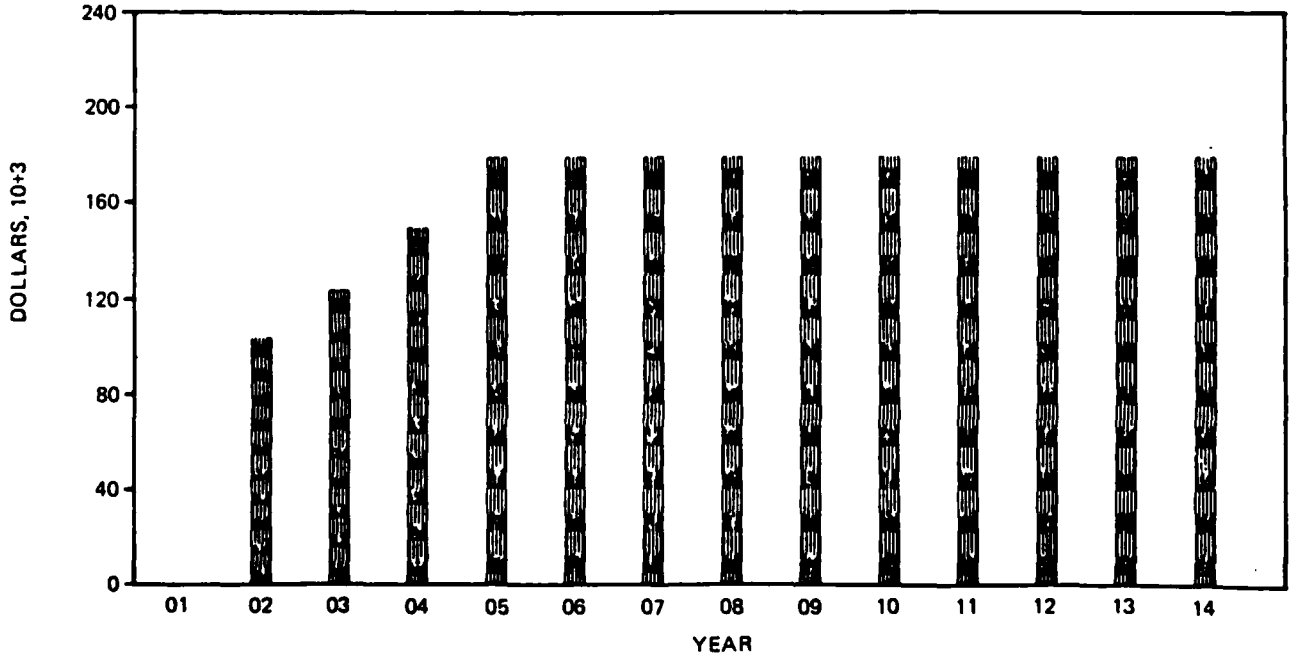


Figure 8. Sample Projection Yearly Savings

COMPARISION OF TOTAL LIFE CYCLE COSTS
OF THE CURRENT AND PROPOSED DESIGNS

COST BREAKDOWN STRUCTURE NUMBER		TOTAL LIFE CYCLE COST IN THOUSAND DOLLARS		
		CURRENT DESIGN	PROPOSED DESIGN	CALCULATED DIFFERENCE
0	TOTAL LIFE CYCLE	8144,340	7859,113	285,227
100000	TECHNOLOGY TRANSFER FABRICATION & TEST	0.0	0.0	0.0
200000	INVESTMENT	3565,088	3496,008	69,079
210000	GOVERNMENT PROGRAM MANAGEMENT			
220000	PRIME EQUIPMENT ACQUISITION			
221000	PRODUCTION MANAGEMENT			
222000	PRODUCTION SUPPORT & SERVICES			
223000	PRODUCTION TEST & EVALUATION			
224000	TRANSPORTATION			
225000	INSTALLATION & CHECKOUT			
230000	INITIAL SUPPORT ACQUISITION	356[illegible]88	349[illegible]08	6[illegible]79
231000	SUPPORT & TEST EQUIPMENT ACQUISITION			
232000	SUPPLY SUPPORT	3[illegible]88	3[illegible]08	6[illegible]79
232100	INITIAL SPARES	3[illegible]01	3[illegible]76	5[illegible]25
232110	PRIME EQUIPMENT	3[illegible]01	3[illegible]76	5[illegible]25
232120	SUPPORT & TEST EQUIPMENT			
232200	NON ENTRY INTO THE SUPPLY SYSTEM	1[illegible]25	[illegible]32	[illegible]91
233000	FACILITIES			
233100	OPERATIONAL			
233200	MAINTENANCE			
234000	DOCUMENTATION			
234100	ACQUISITION			
234200	REPRODUCTION AND DISTRIBUTION			
235000	TRAINING			
235100	OPERATION			
235200	ORG/SUPPORT LEVEL MAINTENANCE			
235300	DEPOT LEVEL MAINTENANCE			
235400	INSTRUCTOR			
235500	TRAINING AIDS			
300000	OPERATING AND SUPPORT	4579,[illegible]58	4363,[illegible]04	21[illegible]54
310000	OPERATION			
311000	PERSONNEL			
312000	FACILITIES			
313000	ENERGY CONSUMPTION			
314000	MATERIAL CONSUMPTION			
315000	SOFTWARE MAINTENANCE			
320000	SUPPORT	4579,[illegible]58	4[illegible]04	21[illegible]54
321000	CORRECTIVE MAINTENANCE	[illegible]17,[illegible]70	[illegible]84,[illegible]46	[illegible]41,[illegible]24
321100	LABOR	[illegible]56,[illegible]08	[illegible]15,[illegible]51	[illegible]40,[illegible]57
321110	ORG/SUPPORT LEVEL (REMOVE & REPLACE)	122,[illegible]88	[illegible]85,[illegible]57	[illegible]37,[illegible]31
321120	SUPPORT LEVEL (REPAIR)	[illegible]84,[illegible]20	[illegible]85,[illegible]94	[illegible]98,[illegible]26
321130	DEPOT LEVEL (REPAIR)	17[illegible],62	[illegible]3,[illegible]20	37,[illegible]33
321200	REPAIR MATERIAL			
321300	TRANSPORTATION AND PACKAGING	[illegible],41	[illegible],42	[illegible],99
321310	MATERIAL HANDLING LABOR			
321320	PACKAGING MATERIAL			
321330	SHIPPING	[illegible],41	[illegible],42	[illegible],99
322000	PREVENTIVE MAINTENANCE			
322100	LABOR			
322200	MATERIAL			
323000	OVERHAUL	90,[illegible]00	7[illegible],40	1[illegible],60
323100	LABOR			
323200	MATERIAL	90,[illegible]00	7[illegible],40	1[illegible],60
323300	TRANSPORTATION			
324000	SUPPORT & TEST EQUIPMENT MAINTENANCE			
325000	FACILITIES			
325100	SPACE			
325110	SUPPORT LEVEL			
325120	DEPOT LEVEL			
325200	INVENTORY STORAGE			
325210	SUPPORT LEVEL			
325220	DEPOT LEVEL			
326000	DOCUMENTATION MAINTENANCE			
327000	SUPPLY SUPPORT	1381,[illegible]39	1[illegible],[illegible]67	[illegible],[illegible]72
327100	REPLENISHMENT SPARES	1[illegible],[illegible]48	1[illegible],[illegible]16	[illegible],[illegible]32
327200	SUPPLY SYSTEM MANAGEMENT	13[illegible],90	[illegible],[illegible]16	[illegible],[illegible]74
328000	TRAINING			
328100	OPERATOR			
328200	SUPPORT LEVEL MAINTENANCE			
328300	DEPOT LEVEL MAINTENANCE			
330000	TERMINATION			

Figure 6. Sample Report Format

The features of the CCM can be separated into three segments:

1) Comprehensive life cycle cost parameters can be used to as much detail and accuracy as available. This allows for constant updating and adding to the system as data is derived from the logistic support community.

2) Reports are available over 10-year periods or longer if necessary. Graphical presentations of the output at all levels can be shown for growth, learning curve, deployment, etc.

3) Delta cost comparisons per category or even to seven (or more) levels of detail within the Work Breakdown Structure (WBS) are available.

Thus, with the completion of the Collateral Cost Model, the question as to the validity of the approach could be addressed. Are collateral savings measurable, documentable, and projectable?

First, what are the primary factors to be considered from a measurable standpoint. Is there a:

1) Reliability improvement?

2) Reduction in the National Stock Numbers (NSNs)?

3) Replenishment spares cost reduction?

4) Repair material rate change?

5) Transportation cost reduction?

6) Storage or shop space reduction?

7) Training, documentation, or preventive maintenance cost reduction?

One of the 61 basic equations used in the computer program shows how the factors can be measured. See *Figure 5.*

Second, documenting the results of computer programs is relatively easy because within this program we had available 13 different report formats, one of which is shown in *Figure 6.*

Finally, projections could be made as far as 20 years from year 1 and could be presented in tabular, bar chart or graphic formats. See *Figures 7 and 8.*

Title:

Organizational/Intermediate Level Corrective Maintenance Labor Costs Incurred During the Repair of a Field Item are:

Equation:

$$\sum_{I=1}^{Y} N(I) \bullet \sum_{K=1}^{NK} OT \bullet DC(K) \bullet QTY(K) \bullet LSI(K) \bullet RSL \bullet RSS(K) \bullet (1\text{-}DSC(K))/(R(K) \bullet FR(I))$$

Definition:

Where:

N(I)	=	Prime equipment inventory (equipment/year)
OT	=	Prime equipment operating time (hours/equipment/year)
DC(K)	=	Duty cycle of Kth item (ratio)
QTY(K)	=	Quantity of Kth item (quantity/item)
LSI(K)	=	O/I maintenance time to repair the Kth item (hours/item)
RSL	=	O/I maintenance personnel pay rate ($/hour)
RSS(K)	=	Repair level ratio (ratio)
DSC(K)	=	Discard rate of Kth item (ratio)
R(K)	=	Mean time between failures of Kth item (hours/failure)
FR(I)	=	Reliability improvement/degradation factor (factor)

Figure 5. Sample of One Basic Equation

4) Maintenance concept consisted of a three-level support structure:

   - Depot
   - General Support
   - Direct Support

5) The U.S. Army parts inventory cost reduction numbers would be based on utilizing a 60 percent factor. This factor came about after completion of a study by Government logistic personnel which resulted in an estimate that approximately 60 percent of the system parts are unique to Roland and were not in the U.S. Army Supply System.

6) All initial entry costs within the investment cost category would be considered as a future or concurrent contract savings (i.e., initial spares, initial training, initial entry into the supply system, etc.). This poses a very interesting situation, because the question had never come up before in VE, as to how these costs/savings are to be considered. The Government agreed that these are additional areas of costs/savings, and because they fall within the acquisition phase should be awarded on a 50/50 basis as part of the instant or future contracts rather than as part of collateral.

7) All calculations were to be based on FY'82 constant dollars which could be changed later by agreement of the Government. Since the first agreement was made in 1980, the precise period chosen was the third quarter of 1982 and the escalation factor used to arrive at the 1982 figure was 1.52587.

8) All payments on collateral savings would be made on a per-unit basis at the time of contract award. The payments would be based on a specific total procurement (which was known at the time of the agreement – 19 August 1980) in the following quantities:

Missiles	6,186
Fire Units	167
Field Maintenance Test Sets	17
Organizational Maintenance Test Sets	43
Organizational Training Equipment	25

The "Model"

Once the baselines and ground rules were established, it was then necessary to write a program. As previously discussed, we took the baseline data (derived from LSAR and ROLOG) and completed the Life Cycle Cost model which we called ROL-LCC(1). This was the baseline model. Next, we duplicated the baseline model and called this ROL-LCC(2). Into ROL-LCC(2) were fed all ECPs and VECPs which effectively changed the baseline model ROL-LCC(1). By taking ROL-LCC(1) and ROL-LCC(2) output data and feeding this data into a third model which we called Collateral Cost Model (CCM) we were able to derive sufficient tables, graphs, and reports for submittal to the Government as part of the VECP package. See *Figure 4*.

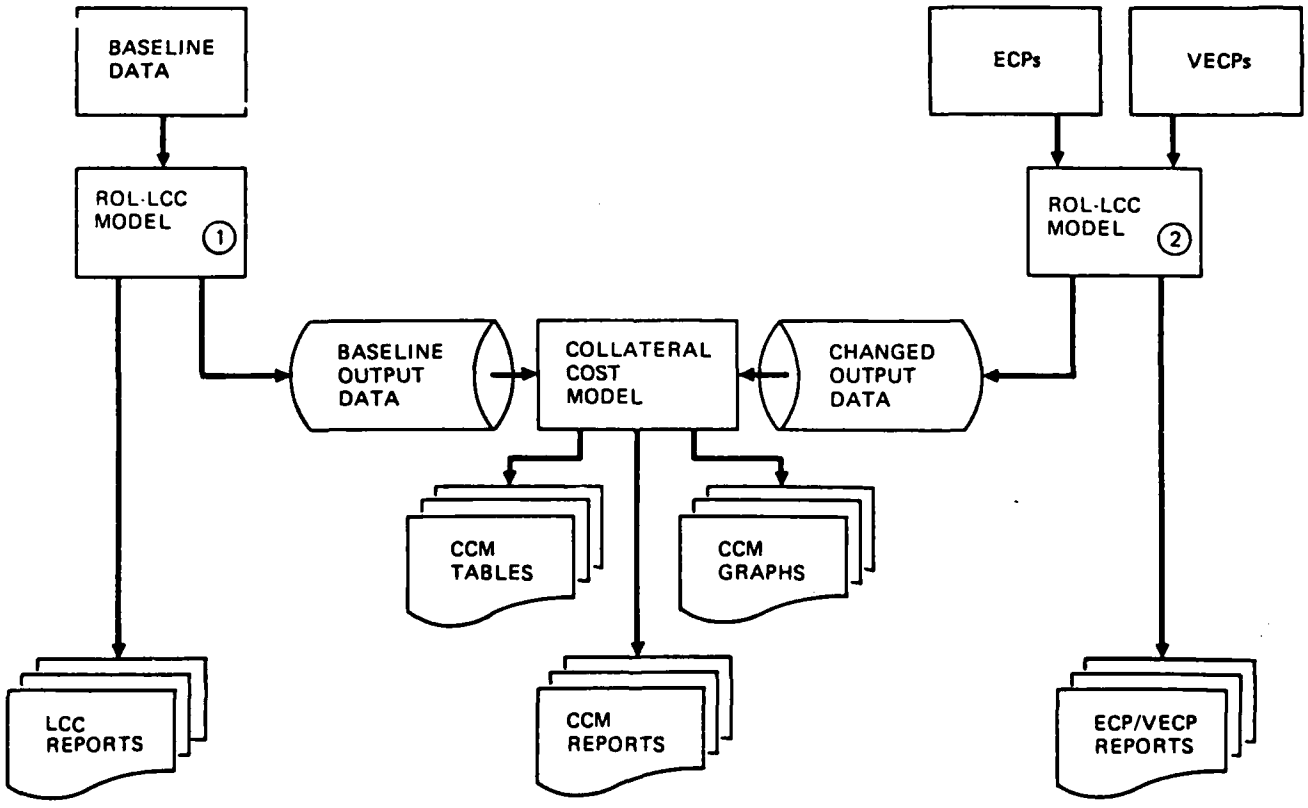


Figure 4. Collateral Cost Model

The products of LSAR when programmed into a computer model (which the Army Roland Program Office called the "U.S. Roland Logistics Model-ROLOG) evaluates, determines, and computes:

1) Logistics and support alternatives
2) Operational and supply availability times (back order waiting time)
3) Spares provisioning
4) Personnal and skill requirements
5) Support equipment usage
6) Direct annual maintenance manhours by hardware item and skill code specialty
7) Waits, stockage levels, and throwaways
8) Sensitivity analysis of cost drivers
9) Effect on Mean-Time-To-Repair (MTTR)/Mean-Time-Between Failure (MTBF) characteristics
10) Weight and volume of repair parts and spares
11) Repair parts, special tool, and equipment requirements

Also during 1977, the Army completed a life cycle cost model which was called the Roland Cost Model (ROLCOM). They used ROLCOM to calculate provisioning costs, replenishment costs, and depot material costs. The ROLCOM was also used to handle changes in production, training and deployment schedules, as well as changes in supply and maintenance concepts. However, the primary purpose of ROLCOM was tradeoff analyses for hardware changes coming from higher headquarters ("what-if" exercises).

During this same period, Hughes completed an independent LCC model called the Hughes-Roland Life Cycle Cost model (ROL-LCC). The Hughes model was a summary of the Army's model. It was not as detailed as the Army's LCC model but was adequate for our purposes.

Both the Government's and contractor's LCC models were used for baseline cost estimates on changes to the system. The Government's model has been designed to be consistent with Department of Army Directives where the methodology has been validated. The contractor's model is consistent with the Government's model and this fact in itself tends to validate both models.

Modeling techniques, although they may not predict absolute values perfectly, are normally very accurate in predicting delta costs between competing approaches. Therefore, by utilizing a validated life cycle model and aplying the changes resulting from VECPs to a duplicated model, the delta would be very accurate for collateral savings.

After determining that modeling could be the answer to Government collateral acceptances, a master plan was needed to develop a program which could satisfy the collateral requirements.

We had to develop a system which could tie together the Government LSAR program, the ROLOG program, the ROLCOM program, and Hughes budget model and LCC models to arrive at a Collateral Cost Model (CCM). (See *Figure 3.*)

Baseline and Ground Rules

A baseline approach and ground rules had to be established and agreed to by all parties prior to starting the effort. Some of the more important agreements were:

1) The LSAR data was the primary data base for the CCM. This was mandatory because the LSAR was a joint effort completed by Hughes and Government logistics personnel and had the blessings of both organizations.
2) It was agreed that the concept and schedules in effect at the time of award of the Instant Contract would hold, because program deployment and maintenance concepts and schedules were in a constant flux.
3) Deployment was defined as a four-battalion program with two of the battalions designated to two separate deployment sites.

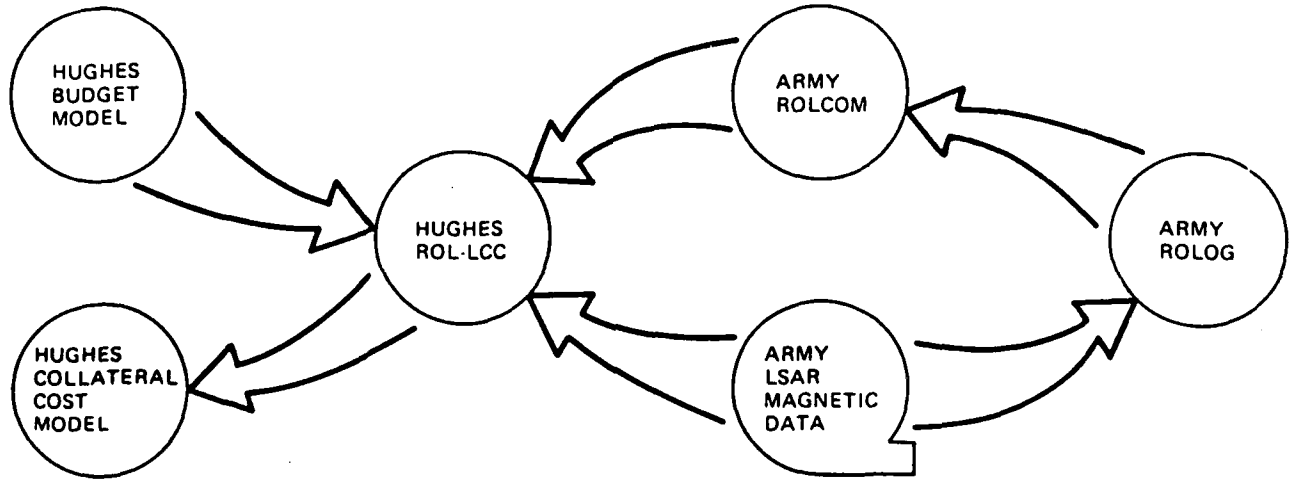


Figure 3. Roland Collateral Cost Model Flow Diagram

share of the savings. Given these kinds of instructions, contractors hardly ever receive a share of collateral savings. The contracting officers have never been able to "document their file" sufficiently to withstand a General Accounting Office (GAO) audit. As a result of his lack of documentation, the contracting officer unilaterally rejects any claims for savings by contractors. In truth, you can not blame the contracting officers for taking the positions they have.

The Program

Something had to be done to change this situation. The opportunity came early in 1977 on the U.S. Roland Program at Hughes Aircraft Company. The Roland is an all-weather, short range, low altitude, highly mobile air defense missile system designed and developed by the French-German team of Aerospatiale and Messerschmitt-Boelkow-Blohm (MBB). During this period, Hughes had a very active VE program going with a high degree of customer support. Because of this positive support, we decided to spend company overhead money in developing an approach toward collateral which would give the contracting officer enough "proof" of the existence of Operations and Maintenance (O&M) savings to award collateral payments to the contractor.

The Approach

We started by taking the definition then existing in ASPR, used the Government's own words, and developed an approach based on that definition. We defined collateral, in our terms, for the military departments or agencies as:

- Operations
- Maintenance
- Logistic Support
- Provisioning
- Etc.

The Goal

Simply speaking, our goal was to prove that there were collateral savings. These savings had to (a) be measurable, (b) be documentable, (c) be projectable, and (d) directly result from a VECP.

The Framework

As discussed earlier, the life cycle cost is the total cost to the Government for acquisition and ownership of an equipment over its full life. It includes research, development, production, operation, and maintenance support costs. If there are any VE savings during development or production, the effect of these savings can be easily extrapolated throughout the operation and support periods.

In the past 10 years, great emphasis has been placed on the use of "Life Cycle Cost Models (LCC)" by both industry and Government. It therefore became apparent that, by carefully selecting an existing LCC computer program rather than developing a costly new program, the LCC program selected could be modified rather inexpensively to achieve a format adaptable to a VE collateral savings proposal.

If we could choose an acceptable life cycle cost model, the projected VE collateral savings could then be measured and used to document the savings.

Share Attacked

The contractor's share of the projected collateral savings is 20 percent of 1 year's savings. This is one of the major problem areas. The 20 percent figure creates an almost total lack of interest by contractors in pursuing any collateral programs. We felt something had to be done to enhance the contractor's share to warrant expenditures of corporate resources. Therefore, we proposed to the Government and received backing from the Army Program Manager and Contracting Officer for them to request a waiver from higher headquarters. This waiver increased the percentage to 50 percent of the calculated savings of an average year of operation over the 10-year life cycle of a program. A 50 percent share to the contractor would be less than 5 percent of the total collateral savings generated by the VECP.

We also defined an average year of operation as the first year following the year after deployment of the last unit in the field. This worked out to be 3 years for buildup and 10 years for full deployment. The first year for collateral was the first year within the 10-year period (that was considered the average year).

This share, once determined, is then added to the instant contract in the same manner as royalty payments would be added. Of course the contracting officer still made the final determination, which is never subject to disputes before or after determination.

Payments Attacked

The actual savings for collateral occurs during the deployment period. Payment is required, however, during the acquisition period with the Instant Contract. The "true savings" can not be evaluated until actual experience in the out-years. Contracting officers will not pay on estimates. The result – seldom, if ever, do contractors receive any share of the collateral savings. When contractors do submit collateral savings requests, they do so with the intent of using them as a negotiating tool or to just simply waive their rights completely to gain some other goal.

The Roland approach pays the contractor a fixed amount for each unit purchased by the contracting officer. The method for arriving at a Unit Collateral Savings (UCS) figure is discussed later, as well as the method of arriving at the fixed quantity against which the UCS is figured. The payment is made as part of each contract award during the acquisition savings period and is small enough so that it can be paid out of the Government's savings.

The Collateral Cost Model (CCM)

The development of the CCM both at the contractor's facility and within the Government took close to a year to complete. The result was favorable for both the contractor and Government.

On the Government's side of the modeling effort, the Logistics Command completed the very necessary Logistics Support Analysis Record (LSAR). The LSAR defines the system support requirements for the total program. It computes the operation, maintenance, and supply support policies and concepts for facilities, test equipment, and training material capabilities. In addition, the LSAR computes the mission, performance, environment, and skill capabilities as well as reliability and maintainability characteristics.

The detailed data fed into the LSAR program includes type and frequency of spares required, elapsed time in pipeline, personnel requirements, and support equipment requirements. The supporting data includes failure rates, repairability status, source data, recoverability, and washout ratios.

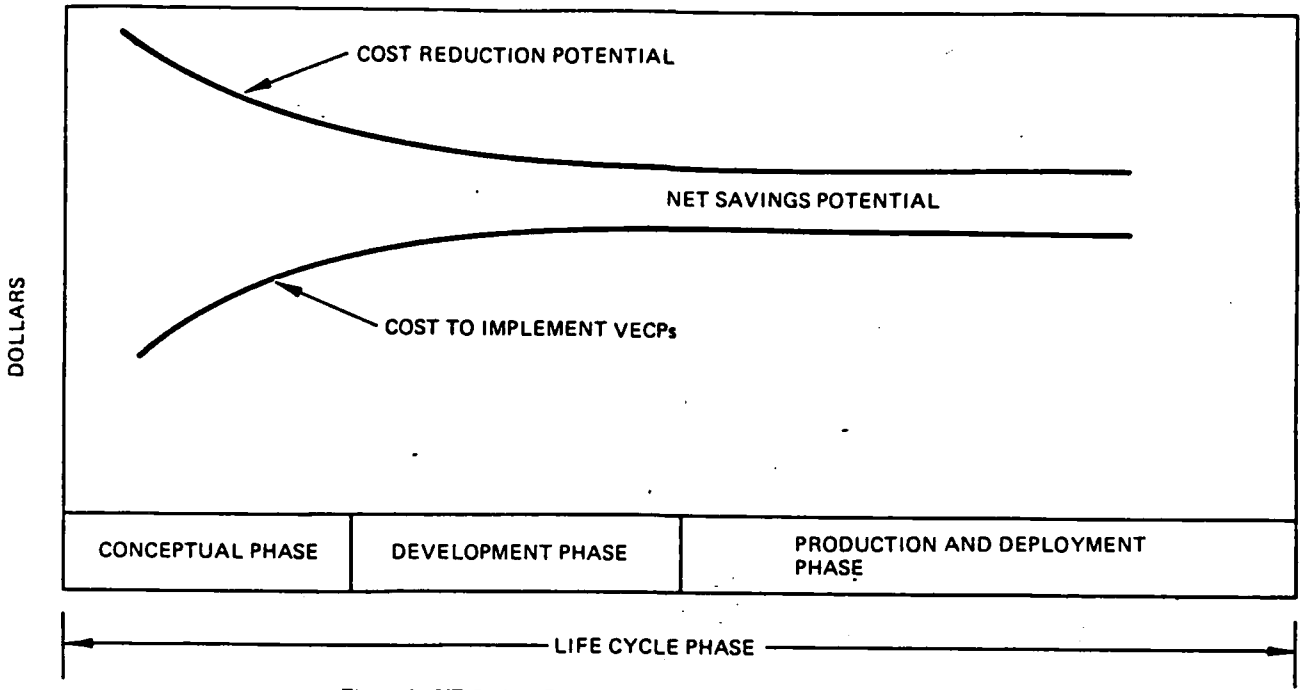


Figure 2. VE Savings Potential During the Life Cycle of a System

What is Collateral Savings?

Webster's Seventh New Collegiate Dictionary defines Collateral as:

(a) accompanying as secondary of subordinate

(b) indirect

(c) serving to support or reinforce

All three of these definitions can be used to tell what collateral does in a VE sense. It accompanies a change to the acquisition savings created by the VECP. Collateral savings do not directly affect the hardware but are indirect thereto. Finally, collateral savings definitely support or reinforce the basic VECP submittal. But even this definition does not tell the reader where collateral savings fit into the Life Cycle of a system.

Both Defense Acquisition Circular 76-26 and 76-39 define collateral as costs or savings after the acquisition period. The circulars also state what the contractor's share will be in these savings.

1-1701(b) "Collateral costs means agency costs of operation, maintenance, logistics support, or Government-furnished property."

1-1701(c) "Collateral savings means those measurable net reductions resulting from the VECP in the agency's overall projected collateral costs, exclusive of acquisition savings whether or not the acquisition cost changes."

1-1706.2 *"Sharing of Collateral Savings.* The contractor's share of collateral savings is 20 percent of the estimated savings to be realized during an average year of use but shall not exceed (i) the contract's firm fixed-price, target price, target cost, or estimated cost at the time the VECP is accepted; or (ii) $100,000, whichever is greater."

7-104.44 (g) *"Collateral Savings.* If a VECP is accepted, the instant contract amount shall be increased, as specified in (f) (3) (iv), by 20 percent of the projected net reduction in collateral costs determined to be realized in a typical year of use after subtracting any Government costs not previously offset. However, the Contractor's share of collateral savings shall not exceed (i) the contract's firm fixed price, target price, target cost, or estimated cost at the time the VECP is accepted, or (ii) $100,00, whichever is greater. The Contracting Officer shall be the sole determiner of the amount of collateral savings, and that amount shall not be subject to the Disputes clause. In all cases, degradation of performance, service life, or capability shall be considered in determining savings."

That constitutes the full extent of the Department of Defense definition and implementation instructions on collateral costs/savings. It becomes quite obvious why most contracting officers in the Government are reluctant to allow contractors a share in any of these savings. To most of the contracting officers, the savings are phantom in every sense of the word.

The Armed Services Procurement Regulations (ASPR) had a few more words to say. It called collateral savings measurable, documentable, and projectable reductions; but again gave no instructions as to the acceptance criteria for granting the contractor a

was adequate information available beforehand which identified the high risk area! This might be like running out of gas on the turnpike even though the gas gauge reads near empty before it happens. The reason these high risk areas do not get properly addressed is that there does not exist a method to identify their true criticality and/or to communicate the true situation with enough precision to precipate corrective action.

JUST IDENTIFYING A HIGH RISK AREA IS NOT ENOUGH !

There must be, as Decision Technology provides, a description of what makes it high risk and by how much. When this is known, it should provide the understanding of what must be changed and by how much to achieve the results desired.

See Case History, "PM's Use of the MAP", at the end of this article which describes Program Management's actual application of the MAP for decisions made on a Rocket System Development Program. Note the difference in quantity of testing before and after the MAP solution. The MAP analyses involved recognized, proven and acceptable techniques to determine how good a design is rather than just whether it worked or not. This provides a sensitive and realistic means of verifying the high level of mission assurance probability which actually exists or, as is also shown, discloses shortcomings.

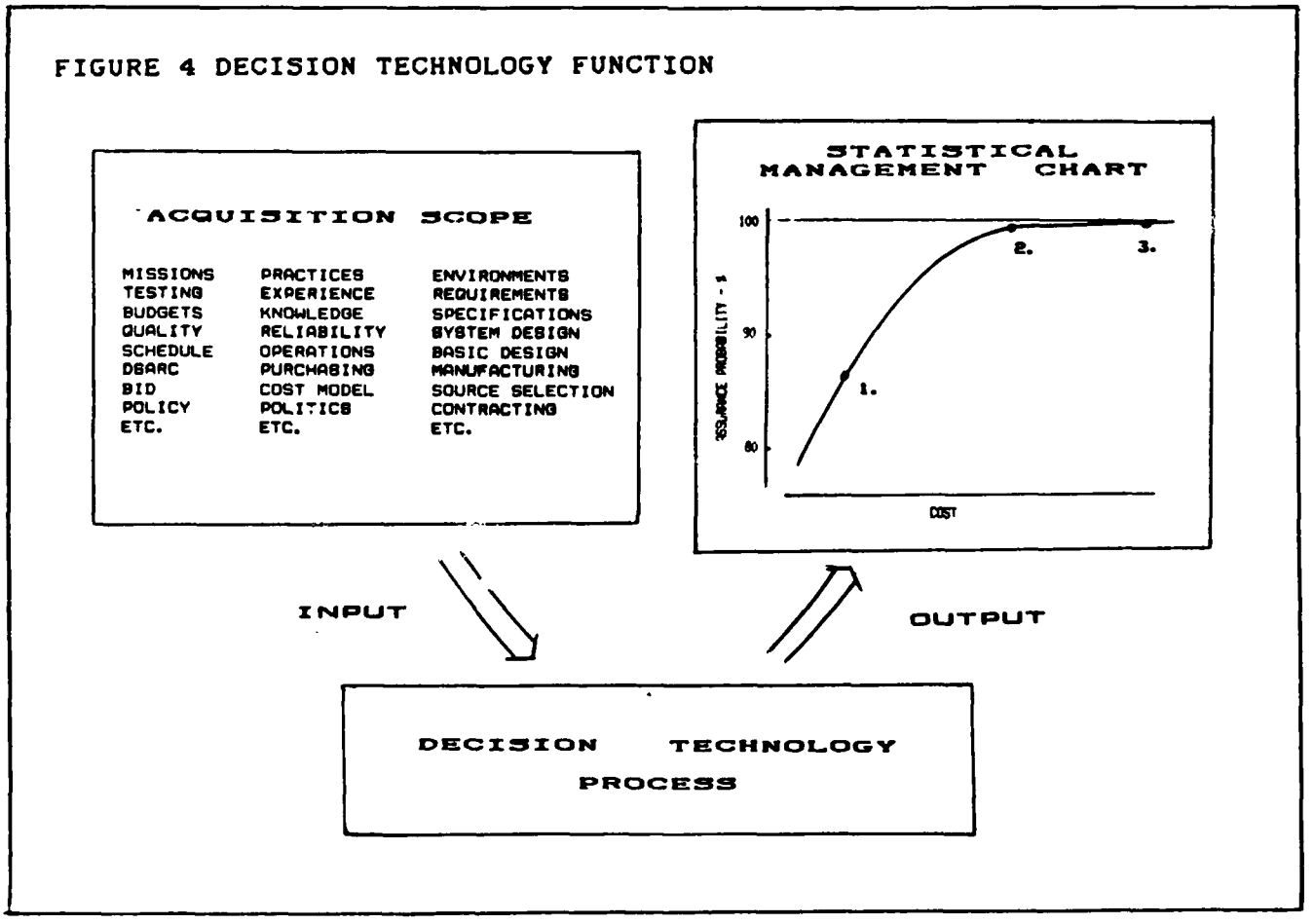
6. RECOMMENDATIONS

Having a formal, well documented system for providing management decision support is an ultimate necessity. Because of the need to develop a philosophy, a concept and the functional systems to handle widely diverse and complex decisions, the formulation of such a system tool took over ten years of evolutionary development. As shown in Figure 4, Decision Technology interfaces with the myriad of influencing factors, evaluating and integrating them to provide the assurance/cost sensitivity for management decision support. Formalizing the documentation and procedures for the almost limitless applications, and training specialists to perform the analyses and handle the implementation, could require an extended period of time.

TOO MANY DECISIONS ARE BEING FOUND TO BE INADEQUATE.

The time to provide decision makers with the support they need is

FIGURE 4 DECISION TECHNOLOGY FUNCTION



now. It is recommended that the decision support system be implemented in three forms so that critical decisions could be enhanced immediately and all decisions could continue to improve until the full potential of the discipline can be achieved.

- First, decision makers and program analysts can use informational briefings on Decision Technology techniques and language to clarify the specific elements involved in formulating decisions. Even though these elements are used in one form or another now, the briefing will provide a formal definition of each element and show how they are interrelated thus creating a uniform language for integrating and communicating all considerations. This level of understanding alone has lead to many significant improvements.

- Second, program analysts and management support specialists can acquire formalized training in the disciplines of Decision Technology and the production of the Statistical Management Chart for the integrated program assurance/cost MAP. Again, immediate benefits can be obtained and on-line supported training can advance the time for self-sustained implementation.

- Third, program management and decision makers can acquire the benefits through the services of outside professionals. These services can be implemented through the mechanism of the Value Engineering Change Proposal DARS as in most instances, high quality performance can be achieved for the project while resulting in a net savings. Decision Technology provides the decision makers with the information and visibility they need to make these choices with a high degree of confidence.

Any one or any combination of the three recommendations can bring the benefits of the MAP to the decision making process.

ACHIEVE HIGH QUALITY
WEAPON SYSTEM
PERFORMANCE
AT REDUCED COST.

Reduce and control cost through control of Mission Assurance Probability. If costs and/or performance on a project are not what it is felt they should be, the question to raise to better understand the situation and support the decisions made is -

"WHERE'S THE MAP ?"

Notes

1. See R.P. Swank, "Assurance Administration An Integral Part of Program Management", National Defense (October 1981).

2. See "Solving the Risk Equation in Transition from Development to Production" (DoD Directive 4245.7) a product of the Defense Science Board Task Force (May 25, 1983), Chairman Willis J. Willoughby, Jr., Naval Material Command.

PM'S USE OF THE MAP

> The MAP analysis provides the PM with the risk data he needs to achieve high Mission Assurance Probability at low initial program cost and also avoid the high follow on costs of failure.

Program management for a military agency and its contractor counterparts were faced with a dilemma on how to build a rocket weapon system having a high, verified assurance of mission success.

The contract from the agency suggested a desire to have a 99.76% assurance of success but stated that there was no known way to verify it so this number should only be used as a guideline. To develop assurance, $41M had been allocated in the contract for 26 full system flight tests. Since current practices would not provide any significant assurance with just 26 tests, the contractor suggested expanding the testing to 500 tests and then, recognizing the cost, reduced the proposal to 350 tests. Even 350 tests would have added over $500M, and this would have more than doubled the entire cost of the development program.

It was at this time that a MAP analysis was performed. The analysis reviewed thousands of performance areas and identified that there were 12 areas of concern and four of these, the structure, heat protection, fusing and system testing, were the ones critical to the performance of the weapon system and the cost of the program. For these four areas, the source and size of variations and the margins needed to handle them were identified from which a new design approach and functional support were selected. With the modified approach, the new and realistic MAP analysis determined that there was a mission assurance probability of 99.76% or greater and identified the means to demonstrate it.

Just including large design margins, additively covering all conditions and variations is not the scientific means of obtaining an optimum system. Identifying and verifying the source and size of variations and margins through all levels of testing and then combining them in the MAP analysis provides a realistic understanding of their integrated effects on success and what it takes to achieve the probability of success desired.

When the total program was reviewed through a MAP analysis, it was found that the full system flight tests could be reduced to 17, and if the test results verified the designers calculations, a mission assurance probability of success of 99.76% could be demonstrated. This provided a savings of $14M and the MAP provided the visibility and information for the agency and contractor program managements to control the critical program elements to achieve overall program success.

As a point of interest, prior to the availablity of the MAP information, the agency PM was requesting that only a 10% margin be used for the heat protection which would result in a weight saving and therefore provide an increase in the weapon system range. The contractor, on the other hand, was holding to a 30% margin to assure success. The MAP analysis revealed that there would be a probability of success of only 87% with a 10% margin. No amount of testing could raise it above this value. On the other hand, the 30% margin was shown to be greater than what was needed.

When all variations and considerations were included, the MAP analysis identified that a margin of 23.1% would provide a verifiable 99.76% assurance of success (with just 17 flight tests). All parties agreed to this approach and all functions knew what they had to do to be compatible.

Synopsis: Program managers are concerned about mission success and program cost. Many times, PM's do not fully appreciate the assurance correlation of these two concerns. Using MAP numbers pays off in two ways. It gives the PM visibility to:

1. avoid unwarranted expense for unnecessary assurance contingencies that generate high initial program costs.
2. avoid failures, rework and delays from assurance oversights that generate even higher ultimate program costs.

By knowing the high risk areas, what makes them high risk and how high the risk is, the PM is in a position to direct the efforts of the program to efficiently resolve all critical areas to achieve high mission assurance probability at low program cost.

CASE HISTORY

ROCKET WEAPON SYSTEM DEVELOPMENT PROGRAM

REQUIREMENTS	SOLUTION BEFORE MAP	SOLUTION AFTER MAP
• Limit margin to 10% to save weight and increase range.	• Increase design studies, program cost and schedule to comply.	• MAP analyses revealed that the 10% margin limits Mission Assurance Probability to 87%.
• 99.76% Mission Assurance demonstration desired. (Original estimate was 68%)	• Develop new test program to increase assurance estimate.	• MAP analyses showed a design margin of 23.1% would achieve a verifiable 99.76% assurance.
• Conduct 26 system tests to demonstrate Mission Assurance.	• Increase 26 tests to 350 at additional cost of $500M. (Raises estimated assurance from 68% to 78%.)	• MAP analyses provided criteria allowing testing to be reduced from 26 to 17 for 99.76% assurance, saving $14M.
• Mutual understanding and acceptance.	• Standard reactions to uncertainties, delays, increased scope and overruns.	• Results of MAP analyses received total acceptance by all elements of Customer and Contractor organizations.

A VALUE ENGINEERING COORDINATOR'S PERCEPTION OF THE DoD VALUE ENGINEERING PROGRAM

Prepared for the DoD Value Engineering Conference, Nov 1 & 2, 1984

Prepared by: Herman Ray Hansen
DCASMA Dallas VEC

Comments from Contractors

1. Contractor has had 5 VECPs approved, 4 disapproved, and 1 withdrawn. Comments were made in 1984.

   Contractor believes that the VECPs were disapproved because the original design activity had the attitude that no one can improve its design. Units provided to foreign buyers have had the rejected ideas incorporated. The contractor is of the opinion that these are better than those being supplied to the U.S. Also, several of the approved VECPs required that the contractor accumulate data to verify and/or determine the actual savings realized over a period of time. The contractor says that the added expense caused by this requirement exceeded his share of the savings. He has stated that his expected share of the savings must be at least $10,000 to make it worthwhile to submit a VECP when the data accumulation requirement is imposed.

   VEC comment: The data accumulation requirement is not imposed by most buying activities. However, this contractor deals basically with only one buying activity and the requirement has been imposed on nearly every VECP that has been approved for this contractor.

2. Contractor has had 2 VECPs approved and 1 disapproved. Comments were made in 1984.

   Contractor stated that other VECPs that had been submitted were not approved, but were subsequently incorporated with no benefit to the contractor.

   VEC comment: If thais happened, it was either before the period that was reviewed or the VECPs were not submitted thru the ACO.

3. Contractor has had one VECP disapproved. Comments were made in 1982.

   Contractor claims to have spent much time and money developing the submittal and supporting data. The VECP was disapproved by a letter dated 43 days after the date of the submittal letter. The reason given for disapproval was a single statement that the contractor had underscoped the software effort.

   VEC comment: The PCO did not send a copy of the disapproval letter to the ACO. As a result, the DCAS engineer that evaluated the VECP contacted the PCO 45 days after the date of the disapproval letter to check on the status of the VECP. The PCO told the engineer that the status was unknown because the buying activity engineer was on sick leave, his secondary had many work tasks and was unable to locate the file, and the regular procurement officer handling this contractor was on leave. The PCO also told the DCAS engineer that a call had been received from the contractor that same week requesting status of the VECP.

4. Contractor has had 1 VECP disapproved. Comments made in 1982.

   The buying activity disapproved this VECP stating that it did not meet VECP criteria.

The contractor did not agree with that assessment and immediately wrote a rebuttal. The buying activity never responded. The contractor requested DCAS assistance on several occasions with no success. The contractor is of the opinion that the Government indirectly promotes requests for deviations in lieu of VECPs thus enabling the contractor to realize the entire savings.

5. Contractor has submitted no VECPs thru this office.
Comments made in 1982.

Contractor stated that there is a prvailing view in industry that the Government does not like to approve VECPs because engineers do not like to admit that they have made a mistake.

6. Contractor has had 2 VECPs approved.
Comments made in 1982.

Contractor stated that it normally takes 6 to 9 months after submission to obtain payment on approved VECPs. Based on his experience, this contractor said that the proposed change must be sold to the technician and engineer ahead of time and, if possible, in a manner that makes it seem like these personnel had participated in developing the idea.

VEC comments: One VECP was approved in 4 months and the savings approved at the same time. The other VECP was approved in 3 months and savings in 9 months.

7. Contractor has had one VECP disapproved.
Comments made in 1982.

Contractor said that he had submitted a VECP several years ago. It was disapproved. Three years later another contractor who had been a subcontractor to this one when the VECP was originally submitted received a contract for that same item, submitted the sameVECP to the same buying activity and it was approved. This contractor protested and after much effort received partial sharing of the savings. This contractor feels that the Air Force is most receptive to VECPs, the Army is not very receptive, and the Navy is outright negative. Based on his experience, it is his opinion that Government personnel like either to maintain their jobs by delaying tactics or else do not have adequate time to take care of VECPs. The contractor said that he had submitted a VECP 5 years ago and it was never even acknowledged.

VEC comment: There is no history on this contractor since he was serviced out of the Oklahoma City office and is now handled out of the New Orleans office.

8. No recorded VECP activity.
Comments made in 1982.

Contractor is disenchanted with doing business with the Government because lengthy delays are being encountered and because of inadequate Government evaluations. As an example, a recommended specification change was cited which would reduce the unit cost of an item. Despite the fact that supporting data was included in the submittal, the contractor received a latter from the buying activity stating that supporting data was required. The contractor informed the buying activity of this fact in a strongly worded letter. Later the contractor received a letter stating

that the proposal had been evaluated and the Government did not desire a change. The contractor is more and more questioning the ability of the Government to state what is wanted. Problems of this type must be worked out before turning attention to VECPs.

VEC comment: This contractor has no current Government contracts with a VE clause.

9. No recorded VE activity.
Comments made in 1982.

Contractor feels that it would be a waste of time to develop a VECP on a Navy contract based on experience with ECPs. The Air Force is much more receptive.

VEC comment: This contractor has only one active contract containing a VE clause and it is a Navy contract.

10. Contractor had 3 VECPs approved and 6 disapproved in 1981.

Contractor has had adverse reaction from the Navy. Some changes that were submitted were incorporated in a "round about" way and the contractor did not benefit.

Chronological History of Varo, Inc. Integrated Systems Division
VECP V-0745-E-56 Contract F33657-79-C-0745

1. VECP V-0745-E-56 submitted by letter dated 9 Feb 82.

2. Contractor letter dated 1 Mar 82 requested document numbers MAV 2-1200-3 Vol II Sup A and MAV 2-5300-1A to assist in preparing cost proposal for the VECP.

3. DCASMA Dallas evaluated the VECP and recommended acceptance by ICM dated 30 Mar 82.

4. Conversation with contractor on 11 Jun 82 revealed that the cost proposal could be prepared only by using a Failure Modes and Effects Analysis (FMEA).

5. Conversation with contractor on 21 Jul 82. The Air Force is unable to provide an FMEA; therefore, the contractor has given Boeing a contract to develop one. The contractor also stated that Hill AFB has the responsibility for spares for this item and tha they are buying established reliability (ER) relays as spares rather than the relays specified in the data package that was provided to Varo. It should be noted here that the subject of the VECP was these relays and it was recommended that they either be screened or be replaced by ER relays. Because of the lack of any failure history in the field, the contractor is of the opinion that the relays in the launchers in the field were either screened or they were ER relays. In either case they would not be the relays specified in the data package.

6. Contractor letter dated 9 Mar 83 to the Chief of the Maverick Contracting Division transmitted the Boeing FMEA and discussed Hughes Aircraft Company's technical analysis of this VECP. A proposal similar to this one was submitted as ECP V-0745-E-49 by letter dated 3 Jun 81. It was disapproved based on a technical analysis by Hughes on the grounds that the inherent failure rate of these relays was acceptable. This finding was based on Hughes experience with LAU 108A and LAU 88A launchers. It was determined by this contractor thru conversations with the relay supplier that the relays used in these launchers as well as the ones used in the qualification units were purchased to a Hughes specification rather than the military specification shown on the drawings. The Hughes specification required a test that eliminated infant mortality and this in effect provided ER relays.

7. Contractor letter dated 25 May 83 submitted VECP V-0745-E-56R1 with cost data.

8. The DCASMA Dallas evaluation of the revised VECP was transmitted by ACO letter dated 9 Jun 83.

9. PCO letter dated 20 Dec 83 disapproved the VECP based on an in-house analysis that did not concur with the predicted high failure rate of the present relay. In addition, the letter said that the aircraft power system has built-in safeguards to aid in prevention of these occurrences and the safety hazard is grossly over-stated.

VEC comments: No justification was provided for these statements. The contractor has had to resort to in-house screening in order to deliver launchers.

Estimated cost of in-house screening	$267,005
Cost of Boeing FMEA	101,879
Total cost absorbed by contractor	368,884
Present contract price	$13,312,000

It should be recognized that if these launchers are ordered by a subsequent contract that this contractor would bid a higher unit price than he bid for this contract and if another contractor was awarded the contract, he would have the same problems that Varo has experienced.

Chronological History of Aerospace Technologies, Inc. VECP
Contract F41608-83-G-0036 SM48

. Letter from contractor to ACO dated 10 Jan 84. Recommended change from 2 piece skins for the F111 Overwing Fairings to 1 piece skins at an increased cost of $130,000.

. ACO forwarded the letter to the PCO on 13 Jan 84 recommending approval.

. On 13 Feb 84 the PCO authorized the ACO to issue a contract modification at no cost to the Government approving the change.

. The ACO advised the PCO by TWX dated 13 Feb 84 that a no cost modification was not acceptable.

. The contractor submitted a VECP dated 3-8-84 proposing the same change that the January letter had proposed.

. Contractor submitted ECP dated 3-14-84 proposing the same change again.

. Both the VECP and the ECP were evaluated by the DCASMA Dallas VEC. During the evaluation the contractor said that he had been advised to submit the change as an ECP because of the normally long evaluation period for VECPs. The ACO forwarded the evaluations to the PCO by letter dated 28 Mar 84 recommending that the change be approved as a VECP.

. Contractor withdraws the VECP by letter dated 28 May 84.

. Modification 02 dated 19 Sep 84 was issued incorporating the ECP dated 14 Mar 84 with a net increase in contract price not to exceed $130,000.

. The contractor was contacted on 12 Oct 84 by the VEC to discuss what had taken place. At this time , the contractor said that the letter withdrawing the VECP was written at the suggestion of the buying activity because the VECP was not going to be approved. The basis for disapproval was that there are no cost savings involved - only cost avoidance.

EC comments: In my opinion, the fact that the change was originally proposed by a etter would be the only legitimate basis for not accepting the VECP. If the term cost avoidance" is a legitimate reason for not accepting VECPs, then there have een many VECPs approved for collateral savings that should not have been. Any time hat a VECP eliminates the requirement for GFE, that is cost avoidance. This would have een an excellent opportunity to demonstrate to contractors in general that the DoD E program actually looks for reasons to accept VECPs rather than trying to find reason to disapprove.

SHERMCO INDUSTRIES

CHRONOLOGICAL ORDER OF CORRESPONDENCE

VECP'S

1) 26 NOV 75 — VECP 0909-02
First Time Submitted

2) 23 JAN 76 — PCO
Disapproval of VECP 0909-02 to ACO
a) Cost based on actual cost is in error
b) Regulator is now obsolete
c) Repair cost to high

3) 30 JAN 76 — ACO
Forwarded PCO 23JAN76 letter

4) 26 FEB 76 — PCO
Disapproval of VECP 0909-02 to ACO
Request ACO's support of recommendation for approval fo VECP

5) 10 JUN 76 — SI
Letter answering PCO 23JAN76 letter
I. a) Cost is based on Government documents
b) Regulator not obsolete, requirement still exists
c) Repair cost by SI the least expensive
II. Total control repaired by SI using their repair procedures and drawings

6) 07 JUL 76 — ACO
Disapproval of Work Requests to repair controls stating controls are not to be repaired

7) 04 AUG 76 — SI
Notifying ACO that we do not have regulators to overhaul inverters - that we have overhauled them for the last six years - and that we can repair the ones we need now

8) 10 AUG 76 — ACO
Received SI letter of 04AUG76, and that they forwarded SI letter of 10JUN76 and VECP 0909-02 to DCASR Production Engineer - Received their recommendation 07JUL76 and forwarded to PCO on 20JUL76

9) 02 SEP 76 — ACO
Stating that no answer has been received from the PCO on their 10AUG76 letter and a follow-up letter dated 13SEP76 was sent.

NOLOGICAL ORDER OF CORRESPONDENCE - continued

09 SEP 76 — ACO
Letter stating PCO again disapproved VECP 0909-02 per 23JAN76 and 26 FEB76 letters

10 SEP 76 — ACO
Letter stating "In view of a number of circumstances unforeseen at the time, recondiseration of...policy is necessary" repair of control board assemblies is authorized

23 DEC 76 — VECP 0365-02
First Time Submitted

29 DEC 76 — PCO
Received VECP 0365-02

07 JAN 77 — VECP 0909-02
Second Time Submitted

11 JAN 77 — SM-ALC/MMIP
To PCO stating in par. (3) that SI is repairing regulators on over and above under VECP clause

14 JAN 77 — VECP 0060-01
First Time Submitted

17 JAN 77 — VECP 0365-01
First Time Submitted

18 JAN 77 — PCO
Received VECP 0909-02 (second time)

26 JAN 77 — PCO
Received VECP 0365-01 and 0060-01 (first time)

31 JAN 77 — VECP 0060-02
First Time Submitted

31 JAN 77 — VECP 0060-03
First Time Submitted

31 JAN 77 — VECP 0060-04
First Time Submitted

01 FEB 77 — PCO
Memorandum stating in par. I,a,1, 2nd that Shermco "FSC regulator...was being repaired by Shermco on over and above under the VECP clause of contracts"

)NOLOGICAL ORDER OF CORRESPONDENCE - continued

01 FEB 77 — PCO
Received VECP 0060-02, VECP 0060-04 (first time)

03 FEB 77 — PCO
Received VECP 0060-03 (first time)

15 MAR 77 — VECP 0104-01
First Time Submitted

22 MAR 77 — PCO
Received VECP 0104-01 (first time)

14 APR 77 — PCO
Stating VECP's were still undergoing evaluation

24 MAY 77 — SI
To SM-ALC/PP asking for help in processing our VECP's

22 JUN 77 — SM-ALC/PP
VECP's are being processed

26 JUL 77 — SI
To SM-ALC/PP (second time) asking for help in processing our VECP's

12 AUG 77 — SM-ALC/PPW
VECP's are being processed

01 SEP 77 — PCO
Disapproval of VECP 0104-01

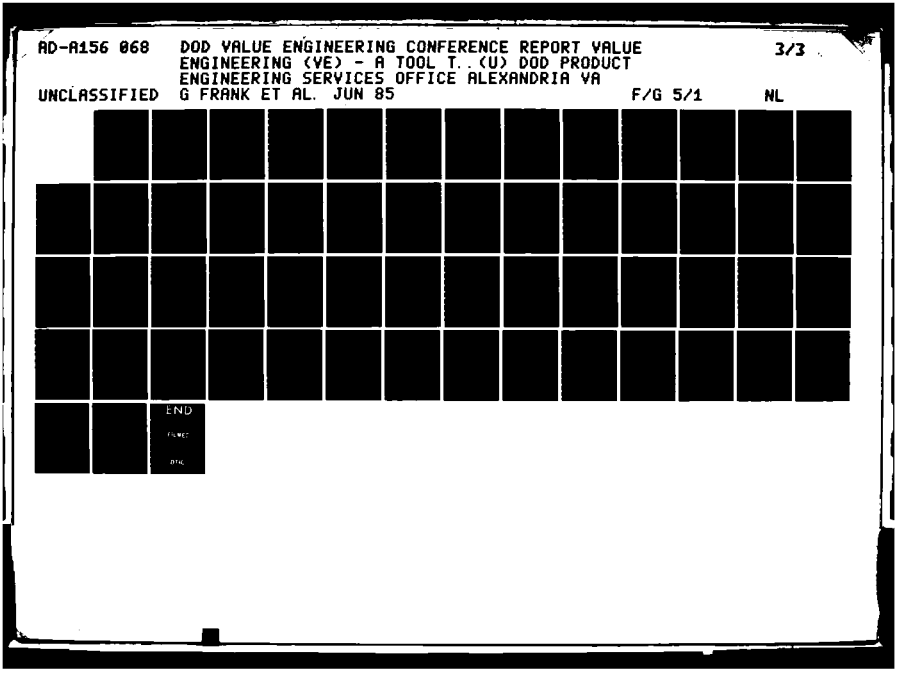
01 SEP 77 — PCO
Disapproval of VECP 0060-01, VECP 0060-02, VECP 0060-03, VECP 0060-04
a) No change to contract to implement VECP

09 SEP 77 — SI
Letter stating VECP 0104-01, 0060-01, 0060-02, 0060-03, 0060-04 were submitted in strict accordance with ASPR, and other VECP had been approved using the same procedure.

12 OCT 77 — PCO
Forwarded Contract Mod #F04606-76-D-0365-P00008 Approving VECP 0365-01 pursuant to ASPR 7-104.44 (a) (1) (May 1971)

CHRONOLOGICAL ORDER OF CORRESPONDENCE - continued

37)	27 OCT 77	SI Returned Mod # D-0365-P00008 because mulitplier is too small (.3)
38)	10 FEB 78	PCO Again returning Mod #D0465-P00008 approving VECP 0365-01 stating that the multiplier is correct
39)	07 FEB 78	PCO Second disapproval of VECP 0104-01, 0060-01 0060-02, 0060-03, 0060-04 pursuant to ASPR 7-104.44 (a) (1)
40)	22 FEB 78	SI Acknowledges rest of 07FEB78 letter
41)	16 MAY 78	PCO Disapproval of VECP 0365-02 and 0909-02 (copy only) a) does not constitute a "Proposal" b) does not require "Changes to the Contract"
42)	23 MAY 78	SI Returning PCO's 16MAY78 letter asking if it should have been sent, it was not signed
43)	07 JUL 78	SI Telling PCO we holding VECP 0365-02 and VECP 0909-02 in an open status as is DCASMA
44)	20 JUL 78	PCO Resent 16MAY78 letter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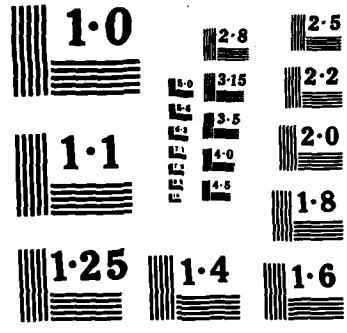

NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

History of a Successful VECP

Contractor: TK International, Tulsa, Oklahoma
Contract: F34601-84-D-0650

On a more positive note, one of the VECPs shown as being open at the end of FY84 has been approved. It was submitted on 29 Mar 84 and approved by a contract modification effective 3 Oct 84 which is a period of 6 months. It received technical approval in July 84, but the PCO was too busy to process the paperwork. The modification authorizing the change as well as the savings was issued on 3 Oct 84. The VECP proposed a change to the overhaul and modification procedure for the TF33 Turbine Nozzle Support. The recommended change was to repair the supports when possible rather than to replace all of them. It was estimated that 42% of them could be repaired. The cost of a new support is $11,526.50 and is furnished by the Government. The estimated cost for the repair procedure is $2,383.78. This gives a net savings of $9,142.72 for each support that is repairable. Since the savings result from the elimination of Government Furnished Parts, they fall into the category of collateral savings. It is estimated that an average years requirement for this part is 481 units. Of these, 202 (or 42%) can be repaired rather than being replaced. On this basis, it is estimated that the net yearly savings will be $1,846,829.44 and the contractor's share of this will be $367,345.08. This amount has been obligated and funded under a separate line item created by the modification that authorized the change. The additional cost to repair will be paid under each order affected.

Summary of Contractor Complaints

1. VECPs take too long to process.

2. Inadequate justification for disapproval.

3. Some buying activities leave the contractor with the impression that VECPs are not welcome.

4. Some contractors have the impression that some VECPs are disapproved because the technical reviewing activity is the same as the original design activity and they do not want to admit that their design can be improved.

VEC Comments

1. a. Mean time for processing the 108 VECPs for which a disposition has been made in fiscal years 77 thru 84 is 6.426 months.

   b. There are 6 VECPs that have been open for a mean of 5.667 months.

   c. DAR 1-1705 states that the contracting officer shall provide the contractor with prompt written notification if the VECP evaluation period will exceed 45 days or if the VECP is nat accepted. If this is done, a copy of such notification seldom reaches the VEC.

2. There have been several instances wherein the reasons given for disapproval appear to be inadequate to the VEC.

3. There have been occasions when the buying activity has given the impression to the VEC that they are too busy to be bothered with VECPs. They are usually assigned the lowest priority; therefore, it takes a long time to process them.
   Example: VECP submitted July 82
   VECP approved Sep 82
   Additional contractor data requested. It was received approximately one year later.
   Dec 83 status report expected definitization of the contract by 30 Jan 84.
   31 Aug 84 status report indicates no action by PCO.
   Example: VECP submitted May 83
   Technical evaluation completed Aug 83
   Status on 31 Aug 84-awaiting Government action.

4. Some of the letters of disapproval have left the VEC with the impression that the buying activity is more interested in finding a reason for disapproval than they are in giving the VECP an objective review.

What Needs To Be Done To Improve The DoD VE Program?

1. Reduce processing and implementation time.

2. When a VECP is disapproved, provide adequate justification.

3. Look for reasons to approve a VECP rather than reasons to disapprove.

How Can This Be Done?

The obvious answer is to create an organization whose sole purpose for being is Value Engineering. All VECPs would pass through this organization for evaluation. When necessary, it would obtain expert outside assistance or have access to the cognizant design authority. This organization would have the final voice in approving or disapproving all VECPs. It would also have the authority to assure that the necessary contract modifications are issued by the PCO or the ACO in a timely manner. Such an organization would be more likely to overcome the major obstacles to a successful VECP program than the present method of handling VECPs.

A possible alternate approach would be to maintain the present system, but assign a high priority to VECPs and provide those persons that are assigned to the VE program the authority to assure that prompt action is taken. It has been the observation of this VEC that any task that is assigned on an as required basis does not receive the same attention that the day-to-day tasks receive unless these as required tasks are assigned a high priority.

TABLE 1: VE STATISTICS – DCASMA DALLAS 10-4-84

FISCAL YEAR	No. of CONTRACTORS VISITED		VISITS		VECPs		NUMBER OF VECPs		
	TOTAL	BY VEC OR ALT VEC	TOTAL	BY VEC OR ALT. VEC	NUMBER SUBMITTED	NO. OF CONTRACTORS SUBMITTING	APPROVED	DISAPPROVED	OTHER DISPOSITION
77	11	7	11	7	24	6	6	18	0
78	32	7	42	13	11	7	5	5	1 WITHDRAWN
79	48	5	63	5	9	7	7	0	2 CANCELLED
80	29	7	34	7	18	9	10	4	4 RESUBMITTED
81	54	4	75	4	20	8	10	9	1 CANCELLED
82	86	16	104	25	14	9	6	6	2 RESUBMITTED
83	82	5	120	7	10	6	1	8	1 OPEN
84	81	9	108	13	8	8	3	0	5 OPEN
TOTAL	423	60	557	81	114	60	48	50	16

DCRT FORM 1000
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GENERAL PURPOSE WORKSHEET

TABLE 2: PROCESSING TIME – APPROVED VECPs

MONTHS IN PROCESS → / FISCAL YEAR ↓	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		31	
77		1								2				1	2							6
78	1	1	2				1															5
79	2		1		1		1														*2	7
80	2	2	2	3				1														10
81	3	1	2	1	2												1					10
82	1	1		1		1					1	1										6
83													1									1
84	1	1				1																3
TOTAL	10	7	7	5	3	2	2	1	0	2	1	1	1	1	2	0	1	0	0	0	2	48

OCRT FORM 1000
APR 68

GENERAL PURPOSE WORKSHEET *SUBMITTED 7 MAY 76, APPROVED 15 JAN 79

TABLE 3: PROCESSING TIME - DISAPPROVED VECPs

MONTHS IN PROCESS → / FISCAL YEAR ↓	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		31	
77				1	3		5									9						18
78	1	1		1	1						1											5
79																						0
80	1	1	1			1																4
81	2	4	1	1	1																	9
82	1	2	2	1																		6
83	2			2		1	3															8
84																						0
TOTAL	7	8	4	6	5	2	8	0	0	0	1	0	0	0	0	9	0	0	0	0	0	50

DCRT FORM 1000
APR 68

GENERAL PURPOSE WORKSHEET

TABLE 4: PROCESSING TIME - OTHER VECPs

MONTHS IN PROCESS → / FISCAL YEAR ↓	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		31	
77																						
78						1 WITH-DRAWN																1
79				1 CANCEL		1 CANCEL																2
80											4 RESUB-MITTED											4
81	1 CANCEL																					1
82														1 REISSUED					1 REVALUED			2
83																1 OPEN						1
84	2 OPEN	1 OPEN			1 OPEN				1 OPEN													5
TOTAL	3	1	0	1	1	2	0	0	1	0	4	0	0	1	0	1	0	0	1	0	0	16

DCRT FORM 1000
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GENERAL PURPOSE WORKSHEET

TABLE 5: APPROVED VECPs DCASMA DALLAS PAGE 1 OF 2

DCASMA VECP No.	CONTRACTOR	SAVINGS: CONTRACTOR PROPOSED	SAVINGS: APPROVED	COMMENTS
V77-1	COOPER AIRMOTIVE	181,907	133,468	
-4	SHERMCO INDUSTRIES	2138	0	MOD REFUSED BY CONTRACTOR. VECPs APPROVED AS FUTURE SAVINGS.
-5	SHERMCO INDUSTRIES	2137	0	
-22	COOPER AIRMOTIVE		204,651	
-23	OPTIC ELECTRONIC CORP.	443	NO COST SAVINGS	
V77-24	↑	46	NO COST SAVINGS	
V78-4	↕	UNKNOWN	UNKNOWN	APPROVED BY LETTER DATED 12-1-78 DISAPPROVED BY LETTER DATED 3-19-79
-5	↕	7604	3802	
-7	↓	2153	1576	
-7	OPTIC ELECTRONIC CORP.	4679	2339	
-8	CABOT CORP.	2198	1727	
V78-10	SPINKS INDUSTRIES	0	NO COST	
V79-2	CABOT CORP.	156.87/UNIT	4392.36 FOR 28 UNITS	
-3	GRUEN MFG CO.	1.40/UNIT	0	
-4	FIRE & TECH EQUIP CORP.	210.00/UNIT	840	
V79-6	METAL FORMS IND., INC	UNKNOWN	0	APPROVED FOR FUTURE CONTRACTS NO VE CLAUSE (94,246 SAVINGS)
NO NUMBER ASSIGNED	VARO TEXAS DIV	UNKNOWN	180,392	2 VECPs SUBMITTED DIRECT TO PCO 7 MAY 76
V79-7	MONTCLAIR ENTERPRISES	0.04/UNIT	819	
V80-1	UNITECK INDUSTRIES, INC	UNKNOWN	8418	
-2	VARO TEXAS DIV.	43,728	2898	APPROVED SAVINGS WAS A CONTRACT REDUCTION
-9	VARO TEXAS DIV	14,188	7168	
-10	ROGAR MFG	8 120	3710	
-11	HERCULES, INC	3988	3988	
-12	↕	1945	1945	
-13	↓	5518	5518	
V80-14	HERCULES, INC	27,661	13,900	

DCRT FORM 1008 (APR 68) GENERAL PURPOSE WORKSHEET

TABLE 5: APPROVED VECPs DCASMA DALLAS PAGE 2

DCASMA VECP No.	CONTRACTOR	SAVINGS CONTRACTOR PROPOSED	SAVINGS APPROVED	COMMENTS
V80-17	VARO TEXAS DIV	UNKNOWN	UNKNOWN	
V80-18	RI-COLUNS	29,143	22,103	
V81-4	COOPER AIRMOTIVE	61,016	30,508	
-5	COOPER AIRMOTIVE	36,225	18,112	
-11	SPACE CORP.	17,928	10,498	
-13	METAL FORMS INDUSTRIES, INC	UNKNOWN.	47,123	REOPENED V79-6
-14	SPACE CORP.	47,301	25,605	
-15	SPACE CORP	38,060	21,910	
-16	AERO TECH UNITED CORP.	UNKNOWN	212,352	
-17	AERO TECH UNITED CORP.	364,419	1,108,455	
-18	BANNER ENGR CORP	6850	9672	
V81-19	CLAY BERNARD	388,780	107,000	
V82-4	DEL FASCO FORGE	1451	NOT KNOWN	
-5	VAC-HYD	48,851	149,542	COLLATERAL SAVINGS ONLY
-9	BEI DEFENSE SYSTEMS	142,000	80,000	ROYALTY PERIOD 2 SEP 83 – 1 SEP 86
-12	TEXAS AEROSPACE	255/UNIT	66,368	
-13	VARO INTEG. SYS. DIV.	UNKNOWN	139,712	
V82-14	JET RESEARCH CENTER	16,464	NOT DETERMINED	
V83-9	VAC-HYD TURBINE CASINGS	343.92/UNIT	1519	COLLATERAL SAVINGS ONLY
V84-1	AERO COMPONENTS CO.	20.00/UNIT	NO CHANGE IN CONTRACT PRICE	
V84-3	AEROSPACE TECHNOLOGIES	6,000,000 OVER SERVICE LIFE OF F111	0	APPROVED AS AN ECP, NOT A VECP
V84-4	BEI DEFENSE SYSTEMS	283,258	NOT YET NEGOTIATED	

DCRT FORM 1008 (APR 88) GENERAL PURPOSE WORKSHEET

TABLE 6: VECP ACTIVITY RELATED TO PROMOTIONAL VISITS

CONTRACTOR	FY 84			FY 83			FY 82			FY 81			FY 80			FY 79			FY 78			FY 77		
	APP	DIS/GOVT	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT
JET RESEARCH							1	0/0	0															
VARO INT. SYS (TEXAS DIVISION)	0	0/0	1	0	4/0	2	1	0/1	1	0	0/0	1	3	1/0	0	1	0/0	1	0	1/0	1			
TEXAS AEROSPACE					1		0	0/1	1							0	0/0	1	0	0/0	1			
HERCULES	0	0/1	3	0	0/0	1	0	0/1	3				4	0/0	0				0	0/0	1	0	0/0	1
BURTEK	0	0/0	5	0	0/0	0	0	1/0	2	0	0/0	1												
BEI	1	0/0	0	0	1/1	1	1	0/0	1							0	0/0	1						
DEL FASCO FORGE							1	1/0	0															
VAC-HYD	0	0/0	1	1	0/0	2	1	1/0	3															
OKLA. AEROTRONICS	0	0/0	2	0	0/0	1	0	3/0	1	0	0/0	1												
FIRE & TECH. EQUIP.	0	0/0	1	0	0/0	1				0	1/0	0				1	0/0	1						
CLAY BERNARD										1	0/0	0												
BANNER										1	0/0	0												
AERO TECH UNITED							0	0/0	1	2	0/0	0												
SPACE CORP.	0	0/0	1	0	0/0	1	0	0/0	4	3	6/0	0				0	0/0	1						
METAL FORMS										1	0/0	1				1	0/0	3						
LA BARGE	0	0/0	1	0	0/0	0	0	0/0	1	0	1/0	2												
COOPER AIRMOTIVE										2	1/1	1	0	0/4	1	0	0/0	1	0	1/0	0	2	0/0	0
RI-COLLINS										0	0/0	4	1	0/0	5				0	0/0	3	0	0/0	1

DCRT FORM 1000
APR 68

GENERAL PURPOSE WORKSHEET

TABLE 6: VECP ACTIVITY RELATED TO PROMOTIONAL VISITS

CONTRACTOR	FY 84			FY 83			FY 82			FY 81			FY 80			FY 79			FY 78			FY 77		
	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT
HAC										0	0/0	1	0	1/0	1									
ROGAR	0	0/0	1				0	0/0	1				1	0/0	1	0	0/0	1						
TRINITY SLING													0	1/0	1									
GENERAL TEXAS													0	1/0	0									
UNITECK													1	0/0	0	0	0/0	1						
MONTCLAIR																1	0/1	0						
ASSOCIATED AIRCRAFT																0	0/1	2						
GRUEN																1	0/0	0						
CABOT																1	0/0	0	1	0/0	1			
OPTIC ELECTRONIC	0	0/0	1	0	0/0	4	0	0/0	2	0	0/0	1	0	0/0	1				3	1/1	1	2	3/0	1
SPINKS																			1	0/0	0	0	1/0	1
PENOLE	0	0/0	2				0	0/0	1							0	0/0	2	0	2/0	0			
SHERMCO																						2	19/0	0
TRACOR MBA	0	0/0	1	0	1/0	0																		
CARGO CARRIERS, INC					1																			
AERO COMPONENTS	1	0/0	1	0	0/0	1																		
AEROSPACE TECHNOLOGIES	1	0/0	2	0	0/0	2																		
TK INTERNATIONAL		1																						

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GENERAL PURPOSE WORKSHEET

TABLE 6: VECP ACTIVITY RELATED TO PROMOTIONAL VISITS

CONTRACTOR	FY 84			FY 83			FY 82			FY 81			FY 80			FY 79			FY 78			FY 77		
	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT	APP	DIS/OTH	VISIT
APACHE ENTERPRISES	0	0/1	1																					
MACHINE PRODUCTS CO, INC	0	0/1	0																					
SUPERIOR WELDING, INC	0	0/1	0																					

	STAYING AT XEROX	ATTENDING WORKSHOPS
FRYBACK, Maj. Clarence G. Manufacturing Engineering Officer HQ, ESD(AFSC)/ALM Hanscom AFB, MA 01731 (617)861-4622/AV 478-4622	X	A
FURLONG, Robert HQ, AF/LEES, BLDG. 516 Bolling AFB Washington, D.C. 20332-5000	No	E
GANNON, Thomas R. Program Mgmt. Div. Director NAVFAC 200 Stovall St. Alexandria, VA 22332-2300 (703)325-0030/AV 221-0030	No	E
GARDNER, Lindsey NAVFAC VE Coordinator Atlantic Division Naval Facilities Engineering Command Norfolk, VA 23511 (804)444-9797	X	E
GARRISON, Don W. Management Analyst - Group Leader U.S. Army Management Engineering Training Activity ATTN: DRXOM-PA Rock Island, IL 61299-7040 (309)794-4041 x244/AV 793-4041 x244	X	D
GIAMBALVO, Philip E. Research Analyst U.S. Army Electronic Warfare Laboratory (ERADCOM) Fort Monmouth, NJ 07703-5303 (201)544-3126/AV 995-3126	X	D
GILLEECE, Mary Ann Deputy Under Secretary of Defense (Acquisition Management) The Pentagon Washington, DC 20301-3060	No	

	STAYING AT XEROX	ATTENDING WORKSHOPS
'OLEY, LTC Norman Deputy Director of Productivity Space Division/PD P.O. Box 92960, WPC Los Angeles, CA 90009 AV 833-0854	X	D
'ORD, Gary HQ, DESCOM ATTN: AMSDS-RM-EIT Chambersburg, PA 17201 (717)263-6591/AV 238-6591	X	A
'ORREST, Richard E. Acq. Interface Director Department of the Navy Naval Sea Systems Command Washington, DC 20362 (202)692-8600/AV 222-3098	No	C
'OWLER, George D. Sr. Operations Staff Officer National Security Agency Central Security Service 9800 Savage Road Ft. George G. Meade, MD 20755 (301)688-8193/AV 235-8193	No	B
'RANK, Gordon A. Chairman, Value Engineering Committee DoD Product Engineering Services Office c/o HQ, Defense Logistics Agency Cameron Station Alexandria, VA 22314 (703)756-2320/AV 289-2320	X	
'RANZEN, Ronald Space Division/YXB P.O. Box 929, WPC Los Angeles, CA 90009 AV 833-1414	X	A
'REEMAN, Denise M. Clerk (Typing) DoD Product Engineering Services Office c/o HQ, Defense Logistics Agency Cameron Station Alexandria, VA 22314 (703)756-2329/AV 289-2329	X	

	STAYING AT XEROX	ATTENDING WORKSHOPS
FERRARO, Linda M. Program Analayst Defense Personnel Support Center ATTN: DPSC-LP 2800 S. 20th St. Philadelphia, PA 19101 (215)952-4139/AV 444-4139	X	B
FETIG, Jack Division Manager, VE Raytheon Co. Boston Post Road Wayland, MA 01778 (617)358-2721 x5594	X	D
FIELD, Robert VE Coordinator NAVPRO Bethpage Grumman Aerospace Corp. Bethpage, NY 11714 (516)575-0779	X	A
FIELDS, Shef VE Coordinator Sacramento Army Depot ATTN: SDSSA-Q Sacramento, CA 95813 (916)388-3151/AV 839-3151	X	B
FINAN, Terence M. Const. Mgmt. Engineer North Division NAVFAC B-77L, U.S. Naval Base Philadelphia, PA 19112 (215)897-6460	X	E
FLETCHER, James R. VE Program Manager U.S. Armed Forces Command Fort McPherson ATTN: AFCO-PI (G) Ft. McPherson, GA 30330-6000 (404)363-5194/AV 797-5122	X	D
FLETCHER, John M. Technical Advisor HQ ESD/OC-1 Hanscom AFB MA 01713 (617)862-6325	X	A

	STAYING AT XEROX	ATTENDING WORKSHOPS
DURAND, Douglas Space Division/YXB P.O. Box 929, WPC Los Angeles, CA 90009 AV 833-0902	X	A
DURHAM, Esmer L. Jr. HQ AFSC/SDXP Andrews AFB, DC 20334 (301)981-3316	X (Nov 1 only)	A
DWICK, Jerome General Engineer DLA, Defense Contract Administration Services Management Area 201 Varick Street New York, NY 10014 (212)807-3175/AV 994-3175	No	C
EDWARDS, LtCol Bob E. Director, Competition Advocate Office Marine Corps Logistics Base Code 160 Albany, GA 31704 (912)439-6515/AV 460-6515	X	B
EMERY, Robert Chief of Quality Assurance USAEMRA Vint Hill Farms Station Warrenton, VA 22186-5114 (703)347-6781/AV 249-6781	No	B
EMINHIZER, Darrell E. Project Manager DoDIG-MAP 1300 Wilson Blvd. Arlington, VA 22209 (202)694-6222/AV 224-6222		C
ESTER, Raymond H. Project Officer HQ AFLC/PMPL Wright-Patterson AFB, OH 45433 AV 787-6048	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
DeVAUGHN, Louis E DARCOM VE Program Manager HQ, DARCOM ATTN: DRCMT-P 5001 Eisenhower Avenue Alexandria, VA 22333-0001 (202)274-8284/AV 284-8284	X	A
DIGNAM, Jack Equipment Specialist Defense Industrial Supply Center 700 Robbins Avenue ATTN: DISC SGE Philadelphia, PA 19111 (215)697-4510/AV 442-4514	X	B
DiRITO, Vince Research Scientist USA HQ, Research & Technology Lab Mail Code 207-5 Moffet Field, CA 94035 AV 359-5578	No	A
DOBROW, Paul V. Chief of VE Office of Chief of Engineers DAEN-ECR-V Washington, D.C. 20314 (202)272-0447	X	E
DOHERTY, LTC Frank AF VE Rep OUSDRE(AM)IP The Pentagon, Room 2A318 Washington, DC 20301-3060 (202)695-7915	X	C
DOMINGOS, Joseph Weapon System Specialist HQ MAC/LGMA Scott AFB, IL 6225 AV 638-4771	X	D
DORNEY, G. VE Program Manager Defense Industrial Supply Center 700 Robbins Avenue ATTN: DISC-SGE Philadelphia, PA 19111 (215)697-4514/AV 442-4514	X	B

	STAYING AT XEROX	ATTENDING WORKSHOPS
CROCKETT, Thomas O. Course Director, Army Materiel Acq. Mgt. Course U.S. Army Logistics Management Center ATTN: AMXMC-ACM Fort Lee, VA 23801-6040 AV 687-3364/3878	No	D
CSISAR, James G. Principal Analyst Analysis and Technology, Inc. Rt. 2, P.O. Box 220 North Stonington, CT 06359 (203)599-3910	X	D
CUNNINGHAM, Thomas Value Engineer Armament Research and Development Center HQ, US Army Armament, Munitions, and Chemical Command ATTN: DRMC-PMV(D), Bldg 1 Dover, NJ 07801-5001 (201)724-6035/AV 880-6035	X	A
CUYLER, Lynn E. Industrial Engineer DCASMA - Twin Cities 2305 Ford Parkway St. Paul, MN 55116 (612)690-8297/AV 825-6297	X	C
DEGENHARDT, Eugene A. VE Officer U.S. Army Engineer District, St. Louis Corps of Engineers ATTN: LMSVE 210 Tucker Blvd., North St. Louis, MO 63101 (314)263-5450	X	D
DELL'ISOLA, Michael Prog. Mngr., Cost Engineering NAVFAC 200 Stovall St. Alexandria, VA 22332-2300 (202)325-0057/AV 221-0057	X	E
DELONY, James C. Chief, Civil Branch HQ, ATC/DEEEC Randolph AFB, TX 78150 (512)652-4302/AV 487-4302	X	E

	STAYING AT XEROX	ATTENDING WORKSHOPS
COLE, James Space Division/YGI PO Box 92960 WPC Los Angeles, CA 90009 AV 833-0412		A
CONDRA, Juanita Dir of Contracts HQ ESC/LGC San Antonio, TX 78243 AV 945-2453	X	C
COOK, John Value Engineering Manager HQ, TROSCOM DRSTR-MEV 4300 Goodfellow Blvd. St. Louis, MO 63120 (314)263-3680/AV 693-3684	X	B
COPPERMAN, William Hughes Aircraft Co. P.O. Box 1042 Bldg. C2, Mail Station B189 El Segundo, CA 90245	X	C
COSTNER, Robert W. Director, Technical Operations Defense General Supply Center ATTN: DGSC-S Richmond, VA 23297 (804)275-3841/AV 695-3841	X	B
COSTON, CDR O. L. Head of Acquisition Dept. Naval Facilities Engineering Command PACNAVFCENGCOM (09A) Pearl Harbor, HI 96860 (808)471-8381/AV 315-8381	X	B
COUNTS, James T. VE Program Coordinator Department of the Navy Naval Sea Systems Command Washington, DC 20362 (202)692-6789/AV 222-6789	X (Nov 1 Only)	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
CABELL, BG Charles P., Jr. Deputy Commander For AWACS Electronic Systems Division/YW Hanscom AFB, MA 01731 (617)861-3928/AV 478-3928/9		A (Nov 1 only)
CANTRELL, Major Ted Deputy Director for Resources Management Tobyhanna Army Depot ATTN: SDSTO-P Tobyhanna, PA 18566-5081 (717)795-7016	X	B
CHRISTENSEN, Walter Mechanical Engineer Naval Material Command Bldg. 75 Philadelphia, PA 19112 (215)897-6684/AV 443-6684/6	X	D
CLARK, Phillip HQs, DLA Cameron Station Alexandria, VA 22304-6100 (202)274-6793/AV 284-6793	No	B
CLARK, Robert Value Engineer Sanders Associates MER 24-1583C CS2034 Nashua, NH 03061-2034 (603)885-9034	X	C
CODORI, Richard C. VE Program Manager U.S. Army Depot Systems Command ATTN: AMSDS-RM-ET Chambersburg, PA 17201 (717)263-6591/AV 238-6591	X	A
COFFENBERRY, William Chief, Cost/Price Analysis HQ, U.S. Army Armament Materiel Readiness Command ATTN: AMSMC-PCS Rock Island, IL 61299 (309)794-6406/AV 793-6406	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
BROWN, Norman L. Contract Specialist Department of the Army U.S. Army Armament, Munitions & Chemical Command ATTN: DRSMC-PCA-F (R) Rock Island, IL 61299-6000 (309)794-3316/AV 793-3316	X	C
BRUCE, Nelson Design Manager Department of the Navy Code 8324 Naval Air Development Center Warminster, PA 18974 (215)441-2181/AV 441-2181	X	E
BRUNER, Richard G. Executive Director Technical and Logistics Services Defense Logistics Agency (DLA-S) Cameron Station Alexandria, VA 22314 (202)274-6771/AV 284-6771	No	B
BRYAN, Virginia M. VE Manager Commanding Officer Naval Air Rework Facility (Code 230) Marine Corps Air Station Cherry Point, NC 28533 (919)466-7225/AV 582-7225	X	D
BRYANT, Don Chief Contract Operations HQ AFSCS/PMO San Antonio, TX 78243 AV945-2821	X	B
BUSSE, David J. VE Coordinator U.S. Army Tank Automotive Command ATTN: DRSTA-GV Warren, MI 48090 (313)574-8597/AV 786-8597	X	A
BUTLER, John O. VE Consultant Analytical Systems Engineering Corp 5 Old Concord Road Burlington, MA 01803 (616)272-7910 X165	X	A

	STAYING AT XEROX	ATTENDING WORKSHOPS
BONE, Betty J. Base Contracting Officer 314TAW/LGC Little Rock Air Force Base Building 642 Jacksonville, FL 72099 (501)988-3836/AV 731-3836	X	C
BONNER, Frederick J. VE Engineer Project Manager Defense Electronics Supply Center ATTN: SVB Kettering, OH 45444	No	B
BOSKA, Stephen DNL - VE Coordinator Code 412 NUSC New London, CT 06320 (203)440-4821/AV 636-4821	X	C
BOUDREAUX, Alvin General Engineer/VEPM Department of the Army Naval Training Center ATTN: DRCPM-TND-EM Orlando, FL 32813 (305)646-4747	X	A
BRADFORD, Alton Naval Facilities Engineering Command 200 Stovall Street Alexandria, VA 22332-2300	X	E
BRETZKE, Charles R. General Engineer Troop Support Command (TROSCOM) St. Louis, MO 63120 (314)263-2267/AV 693-2267	X	B
BROTMAN, Carl ADUSD(CP) The Pentagon, Room 3D116 Washington, DC 20301 (202)697-8336/AV 227-8336	No	B (Nov 1 only afternoon)

	STAYING AT XEROX	ATTENDING WORKSHOPS
BARON, Herbert S. Electrical Engineer EWL-ERADCOM Fort Monmouth, NJ 07703 AV 995-4927	X	A
BATT, Clayton C., Jr. VE Program Manager HQ, TROSCOM 4300 Goodfellow Blvd. ATTN: DRSTR-MEV St. Louis, MO 63120 (314)263-3680/AV 693-3684	X	C
BEASLEY, Harold Glenn VE Program Administrator Naval Air Rework Facility Code 233 Norfolk, VA 23511 (804)444-8362/AV 564-8362	X	A
BEE, Thomas Assistant Director, Construction ODASD(I)C The Pentagon, Room 3C762 Washington, DC 20301 (202)695-7006/AV 225-7006	No	E
BERZINS, Ed Value Engineer Defense Logistics Agency HQ, Defense Personnel Support Center 2800 South 20th Street Philadelphia, PA 19101 (215)952-4157/AV 444-4157	X	C
BIDWELL, Robert L. Director DoD Product Engineering Services Office c/o DLA, Cameron Station Alexandria, VA 22304-6183 (703)756-2331/AV 289-2331	X	C
BODART, Edward Branch Chief, VE McDonnell Aircraft Co. Dept. 356, Bldg. 32 Level 3, Rom 326 P.O. Box 516 St. Louis, MO 63166 (314)232-4388	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
ASMAN, Peter Value Engineer NAVELEX - Crystal City NC#1, Code 813432 Washington, DC 20363 (202)692-7227/AV 222-7227	X	A
AUSTIN, Freeman G. Value Engineering Program Manager Red River Army Depot ATTN: SDSRR-RM Texarkana, TX 75507-5000 (214)838-3734/AV 829-3734	X	A
AYERS, Chesley Professional Engineer DCASMA Detroit DCRO-GTCS 477 Michigan Avenue Detroit, MI 48226 (313)226-5199/AV 346-5199	X	A
BANASH, Robert C. AMCCOM VEPM HQ, AMCCOM ATTN: DRSMC-PDE Rock Island, IL 61299-6000 (309)793-6260/AV 793-6260	X	C
BARBIERI, Charles VE Program Manager HQ, USAF/RDCA Pentagon Room 4C313 Washington, D.C. 22207 (703)697-4167/AV227-4167	X	A
BARLOW, Daniel Associate Vice President Barlow Associates 2272 Chestnut St. Quincy, IL 62301 (217)224-9751	X	C
BARLOW, Trisha Value Engineer Westinghouse DEC P.O. Box 1693 M.S. 4810 Baltimore, MD 21203 (301)765-0362/AV 721-3223	X (Staying 1 Nov only, & will be there 2 Nov)	D

	STAYING AT XEROX	ATTENDING WORKSHOPS
ADAMS, Aubrey Anniston Army Depot ATTN: SDSAN-PM Anniston, AL 36201 (205)238-6306/AV 694-6306	X	B
ADKINS, Jack S. Value Engineer/Cost Estimator Harry Diamond Labs, DELHD-IT-EA 2800 Powder Mill Road Adelphi, MD 20783-1197 (202)394-2677/AV 290-2677	X	D
ALBRECHT, George H. VE Coordinator HQ, ERADCOM VEPM Commander, US Army ERADCOM ATTN: DRDEL-PO-SP 2800 Powder Mill Road Adelphi, MD 20783 (202)394-3812/	No	A
ANDERSON, N. Roger Chief Avionics/Electronics Div. HQ, AFLC/PTE Wright Patterson AFB, OH AV785-3650	X	D
ANGIULLI, Frank J. Director of Contracts (MSD) Martin Marietta Aerospace Post Office Box 5837 Mail Point 491 Orlando, FL 32855 (305)356-4696	X	C
ARNITZ, William E. Prog. Director GIDEP Operations Center ATTN: FLTAC Corona, CA 91720 (714)736-4677/AV 933-4677	No	B (Nov 1 only)
ASKEW, John W. Management Improvement Branch Head Code 233, Naval Air Rework Facility Naval Air Station Norfolk, VA 23511 (804)444-8362/AV564-8362	X	B

October 23, 1984

ATTENDEE ASSIGNMENTS

DOD VE CONFERENCE

1-2 NOVEMBER 1984

	STAYING AT XEROX	ATTENDING WORKSHOPS
GILLESPIE, James P. Contract Specialist HQ, U.S. Marine Corps Code LBO Washington, DC 20380 (202)694-2315/AV 224-2315	No	B
GLASSCOCK, Jonathan TACOM VEPM U.S. Army Tank Automotive Command ATTN: DRSTA-GV Warren, MI 48090 (313)574-5037/AV 786-5037	X	A
GRAHAM, Wallace E. General Engineer U.S. Army Industrial Engr. Activity AMXIB-MM Rock Island, IL 61299 (309)794-6586/AV 793-6586	X	B
GRANDINETTI, Jean Ann Value Engineering Program Manager Defense Personnel Support Center Directorate of Clothing and Textiles DPSC-TTVE, 2800 S. 20th Street Philadelphia, PA 19101 (215)952-3275/AV 444-3275	X	C
GREEN, James Chief, Productivity Mgmt. Div. Sharpe Army Depot Directorate for Resources Management Productivity, Planning, and Management Div. Lathrop, CA 95331-5000 (209)982-2126/AV 462-2126	X	A
HANDY, Andrew N. AFCC/EPE Scott AFB, IL 62225 AV 638-2736		C
HANSEN, Herman Ray General Engineer DCASMA, Dallas 500 S. Ervay Street Dallas, TX 75201 (214)670-9441/AV 940-1441	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
HARRIS, A. D. Asst. Branch Head/Technical Director Headquarters U.S. Marine Corps Code LMC Washington, DC 20380 (202)695-4788/AV 225-4788	X	A
HARRIS, Fred Chief, Engineering Programs Division Defense Logistics Agency (DLA-SE) Cameron Station Alexandria, VA 22304 (202)274-6781/AV 284-6781		B
HARROVER, Robert C. Genral Engineer Department of the Army U.S. Army Belvoir Research and Development Center Fort Belvoir, VA 22060 (703)664-6873/AV 354-6873	X	A
HARSCH, Elizabeth L. General Engineer Headquarters, Marine Corps Code LMA-2 Washington, DC 20380 (202)694-2606/AV 224-1630	No	A
HART, Mary S. Program Analyst DoD Product Engineering Services Office c/o HQ, Defense Logistics Agency Cameron Station Alexandria, VA 22314 (703)756-2320/AV 289-2320	X	
HARTER, Robert P. Contract Price Analyst Defense Logistics Agency DCASMA Milwaukee Henry S. Reuss Federal Plaza 310 W. Wisconsin Avenue, Suite 340 Milwaukee, WI 53203 (414)291-4331/AV 824-4331	X	C
HARTNETT, David VE Specialist Defense Personnel Support Center ATTN: DPSC-L 2800 S. 20th Street Philadelphia, PA 19101 (215)952-3318/AV 444-3318	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
HARTZEL, Robert Manufacturing Engineering Ofc. Space Division/PDM Los Angeles, CA 90009 AV 833-1744	X	A
HAYNES, Byron Anniston Army Depot ATTN: SDSAN-PM Anniston, AL 36201 (205)238-6306/AV 694-6306	X	B
HENTHORN, Thomas J. VE Program Manager Defense Construction Supply Center Columbus, OH 43215 (614)238-4201/AV 850-4201	X	B
HILLIKER, Allen VE Program Coordinator Naval Air Rework Facility Code 23303, Bldg. 245 N.A.S., North Island San Diego, CA 92135 (619)437-6460/AV 951-6460	X	D
HOGAN, Keith B. Value Engineering Program Manager Department of the Army Tooele Army Depot Tooele, UT 84074-5011 (801)833-2961/AV 790-2961	X	B
HOLLORAN, Thomas M. SA-ALC/PMDM Kelly AFB San Antonio, TX 78241 (512)925-7066/AV 945-7006	X	C
HOOVER, John E. VE Coordinator for Procurement U.S. Army Tank Automotive Command ATTN: DRSTA-GV Warren, MI 48090 AV 786-7024	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
HOPKINS, Thomas M. Consultant Naval Architecture and Marine Engineering 1113 Carper Street McLean, VA 22101 (703)821-2826	No	A
HORN, William F. Chief, Production Branch U.S.A. Signals Warfare Laboratory Vint Hill Farms Station Warrenton, VA 22186-5100	No	C
HORNER, Leonard S. VE Manager Martin-Marietta Aerospace MS D6710, P.O. Box 179 Denver, CO 80201 (303)977-8049	X	A
HOWERTON, Yvonne Space Division/PMLA P.O. Box 92960, WPA Los Angeles, CA 90009 AV 833-2627	X	D
HOWIE, Robert Chief, System & VE PBM U.S. Army Modernization Agency ATTN: SMCPM-PBM-TV 171 Dover, NJ 07801-5001 (201)724-2376	X	A
HUFFMAN, Chris Value Analysis Manager FMC Corporation 1105 Coleman Avenue P.O. Box 1201 San Jose, CA 95108 (408)289-4194	X	A
HUMENRICK, William VE Program Manager Sacramento ARmy Depot ATTN: SDSSA-RPM-1 Sacramento, CA 95813-5013 (916)388-3151/AV 839-3151	X	B

	STAYING AT XEROX	ATTENDING WORKSHOPS
INGRAM, Jo Administrative Assistant OUSDRE(AM)IP The Pentagon Washington, DC (202)695-7917	X	
INGRAM, Montague B. VE Program Manager Defense General Supply Center ATTN: DGSC-SEC Richmond, VA 23297 (804)275-4379/AV 695-4379	X	B
INGRAM, Paula Chief, Plans & Mgmt. Div. (Comptroller) Army Missile Command ATTN: AMSMI-FM Redstone Arsenal, AL 35898-5000 AV 746-8887	X	B
IZZI, Raymond Staff Engineer DCASR-NY 201 Varick Street NY, 10014 (212)807-3095		C
JACKSON, John General Dynamics Corp. Ft. Worth Division Mail Zone 1239 P.O. Box 748 Ft. Worth, TX 76101 (817)777-2224	X	A
JASCOMB, William D. VE Contractor Lockheed-Georgia Company D/72-31, Zone 75 86 S. Cobb Drive Marietta, GA 30063 (404)424-2625	X	C
JARVEY, Danise Mechanical Engineer NAVPRO 4800 East River Road Minneapolis, MN 55421 (612)572-6426/AV 825-6366	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
JENKINS, David L. Course Dir., Quality and Reliability Engineering USAMC Intern Training Center ATTN: AMXMC-ITC-E Red River Army Depot Texarkana, TX 75507-5000 (214)838-2027/AV 829-2027	X	D
JENNINGS, Gary Manager, Cost Effectiveness & VE Hughes Aircraft Corp. Building 607, MSB311 Fullerton, CA 92634 (714)732-9426	X	B
KAMMER, BG Herman C. Commander Defense Electronics Supply Center ATTN: DESC-G Dayton, OH 45444 (513)296-6841/AV 986-6841	No	B
KARR, Thomas Contract Negotiator Department of the Navy Naval Air Development Center Warminster, PA 18974 (215)441-1550/AV 441-1550	X	C
KEEFER, Randolph I. VE Program Manager Department of the Army Letterkenny Army Depot ATTN: SDSLE-RPM Chambersburg, PA 17201-4150 (717)263-6728/AV 238-6728	X	A
KEIDAN, Don Branch Head, Components Engineering NAVELEX-Crystal City NC#1, Code 8134 Washington, DC 20363 (202)692-7227/AV 222-7227	X	C
KHATIWALA, Kenneth C. PMs Coordinator for VE U.S. Army Tank Automotive Command ATTN: DRCPM-FVS-B Warren, MI 48090 (313)574-8251/AV 786-8251	X	A

	STAYING AT XEROX	ATTENDING WORKSHOPS
KLEIN, Alan M. DoD IG Auditor DoD Inspector General Office of the Assistant Inspector General for Auditing Commonwealth Building - 12th Floor 1300 Wilson Boulevard Arlington, VA 22209 (202)694-3942/AV 224-3943	No	C
KNIGHT, John A. Contract Analyst Monitor HQ MAC/LGCP Scott AFB, IL 62225 AV 638-4140	X	C
KNOWLES, James J. General Engineer (VE) HQ DARCOM ATTN: DRCMT-P 5001 Eisenhower Avenue Alexandria, VA 22333-0001 (202)274-8284/AV 284-8284	X	C
KOHUT, A. Francis Chief, VE Research & Development Center ATTN: SMCCR-VE Aberdeen Proving Ground, MD 21010-5423 (301)671-2440/AV 584-2440	X	A
KONG, 1st Lt Jason Space Division/YGJSA P.O. Box 92960, WPC Los Angeles, CA 90009-2900 AV 833-0524	X	A
KOURCE, Andrew, Jr. Chemical Engineer U.S. Army Industrial Engineering Activity ATTN: AMXIB-MM Rock Island, IL 61299-7260 (309)794-5235/AV 793-5235	X	B
KRIEGER, Edward Chief Aircraft Engineer Offutt AFB, NE 68113 AV 271-4591	X	B

	STAYING AT XEROX	ATTENDING WORKSHOPS
KROLAK, Donald Chief, Cost Estimating & Technical Analysis Secondary Items Branch HQ/AMCCOM/DRSML-PDE-S Rock Island, IL 61299-6000 (309)794-5881/AV 793-5881	X	B
KURITZKY, Harvey General Engineer DCASMA Garden City 605 Stewart Avenue ATTN: GCE Garden City, NY 11530 (516)228-5865/AV 994-5865	X	C
KWINSKI, Gregory A. Contract Specialist U.S. Army Armament, Munitions, & Chemical Command ATTN: DRSMC-PCA-F (R) Rock Island, IL 61299-6000 (309)794-3380/AV 793-3380	X	C
LAMBERT, LTC Johnny L. Deputy for Quality & Production Office Assistant Secretary of the Army (RDA) The Pentagon, Room 2E661 Washington, DC 20310 (202)695-4101/AV 225-4101	X	A
LANE, James M. Dep. Dir., Contracting Policy HQ, ESD(AFSC)/PKP Hanscom AFB, MA 01731 (617)861-2415/AV 478-2415	X	C
LaROCQUE, Paul A. Cost and Price Analyst Department of the Navy Naval Supply Center Regional Contracting Dept. Charleston, SC 29408 (803)743-6879/AV 794-6879/2703	X	B
LENEAU, Todd W. Contract Administrator HQ ATC/LGCM Randolph AFB, TX 78150 (512)652-5636/AV 487-1215	X	E

	STAYING AT XEROX	ATTENDING WORKSHOPS
LEPONIS, Andrew DCASMA, Chicago Chicago, IL 60666-0475 AV 930-6814	X	B
LEVINE, Norman, P.E. Electrical Engineer Department of the Army U.S. Army Engineer Division P.O. Box 1600 Huntsville, AL 35807 (205)533-4593	X	E
LEWIS, J. Reginald Asst. Deputy for Manufacturing Department of the Air Force HQ, Armament Division (AFSC) Eglin Air Force Base, FL 32542 (904)882-3876/AV 872-3876	X	A
L'HEUREUX, Richard A. Chief, PESO HQ, ESD(AFSC)/ALM Hanscom AFB, MA 01731 (617)861-3543/AV 478-3543	X	A
LONG, Pateria Administrative Officer DoD Product Engineering Services Office c/o HQ, Defense Logistics Agency Cameron Station Alexandria, VA 22314 (703)756-2329/AV 289-2329	X	
LUCKA, W. A. Div. Chief, Systems, Integrity, & Supportability, VE ESD/ENSI Wright Patterson AFB, OH 45433 (513)255-3448/AV 785-3448/9	X	A
LUKCA, John S. General Engineer Department of the Navy Aviation Supply Office 700 Robbins Avenue Philadelphia, PA 19111 (215)697-2421/AV 442-2421	X	B

	STAYING AT XEROX	ATTENDING WORKSHOPS
LYTLE, Kenneth B. Electronics Equipment Specialist Television Audio Support Activity ATTN: SELTV-D-1 Sacramento Army Depot Sacramento, CA 95813-5019 (916)388-3205/AV 839-3205	X	B
MACABITAS, Ruben General Engineer Code 420, Navy Public Works Center P.O. Box 113 San Diego, CA 92136 (619)235-2825/AV 958-2825	No	B
MACKINSON, William A. Procurement Analyst Naval Supply Systems Command Policy and Planning Division Crystal City, CM #3 Washington, DC 20376 (202)695-5100/AV 225-5100	No	B
MACOTSIS, George DCASR, New York - HCE 201 Varick St. New York, NY 10014-4811	X	C
MAHONEY, James (AF) Space Division/PML P.O. Box 92960, WPC Los Angeles, CA 90009 AV 833-0734	X	C
MALLARD, Jack VE Analyst HQ AFCMD/EPL Kirtland AFB, NM 87117 AV 244-4834 or 9627	X	B
MARK, Melvin VE Officer U.S Army Engineer District, New York 26 Federal Plaza New York, NY 10278 (212)264-9068/AV 796-9068	X	E

	STAYING AT XEROX	ATTENDING WORKSHOPS
MARKET, Charles Dir., Engr. & Design Operations Group HQS, Naval Facilities Engineering Command/04M 200 Stovall St. Alexandria, VA 22332-2300 (703)3235-0452/AV 221-0452	X	E
MARTIN, Robert Value Engineering Officer Baltimore District Corps of Engineers P.O. Box 281 Reisterstown, MD 21136 (301)962-4885/AV 977-5311 x4885	No	E
MARTIN, William H., Jr. VE Officer U.S. Army Corps of Engineers 803 Front Street Norfolk, VA 23510-1096 (804)441-3610	No	E
MARTINEZ, Edward Chief MMEA San Antonio ALC/MMEA San Antonio, TX 78243 AV 945-3936	X	C
MATHEWS, Ray Industrial Engineer DCASMA Baltimore 300 East Joppa Road Room 200 Towson, MD 21204 (301)321-4856/AV 444-4856	X	C
MAYER, Craig L. Branch Chief, Prod. Planning & Mgmt. Div. New Cumberland Army Depot ATTN: SDSNC-RP-M New Cumberland, PA 17070 (717)782-6855/AV 977-6855	X	A
McANINCH, William R. Industrial Engineer Naval Material Command Industrial Mobilization and Production Office (MAT 08M) Washington, DC 20360 (202)692-5885/AV 222-5885		C

	STAYING AT XEROX	ATTENDING WORKSHOPS
McAREAVY, John F., Ph.D. Director, AMETA U.S. Army Management Engineering Training Activity ATTN: DRXOM-DO Rock Island, IL 61299-7040 (309)794-4041/AV 793-4041	X	D
McGARRIGAN, Daniel J. VE Administrator for NAVAIR Naval Air Systems Command Code 551A Washington, DC 20361 (202)692-3190/AV 222-3190	X	C
McGINLEL, Theresa Competition Advocacy Office Defense Personnel Support Center 2800 S. 20th Street ATTN: DPSC-APG Philadelphia, PA 19101 (215)952-4120/AV 444-4120	X	B
McILVAINE, Paul J. Director, Technical Management Dept. Defense Systems Management College ATTN: SE-T Ft. Belvoir, VA 22060-5426 (703)664-3477/AV 354-3477	X (Nov 1 only)	D
McKELVIE, Milton J. Value Analysis Engineer U.S. Army Aviation Command 4300 Goodfellow Blvd ATTN: DRSAV-ELSV St. Louis, MO 63120-1798 (314)263-1672/AV 693-1672	X	C
McKIERNAN, Terence M. Chief, Construction-Operations Div. Department of the Army North Pacific Div., Corps of Engineers P.O. Box 2870 Portland, OR 97208-2870 (503)221-3774	X	E
McLIN, James Industrial Engineer DCASR Dallas - CE 500 South Ervay St. Dallas, TX 75201 (214)670-9402/AV 940-1402	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
MELBY, Robert J. Chief, Operations Audit Support Branch Defense Contract Audit Agency 4075 Park Avenue Memphis, TN 38111 (901)458-4890		C
MILLER, James F. DCASMA Dayton ATTN: DCRO-GDCS c/o DESC 1507 Wilmington Pike Dayton, OH 45444		C
MILLS, Howard G. VE Program Manager Department of the Army Office of the DCS, Resource Management HQ USAREUR and Seventh Army APO, NY 09403 AV 370-7415/8383		C
MITTINO, John A. ADUSD(PS) The Pentagon, Room 3E144 Washington, DC 20301 (202)695-6322		
MLODOZENIEC, Hank VE Program Director Office of the Comptroller (Army) ATTN: DACA-RMP The Pentagon, Room 3B721 Washington, DC 20310 (202)695-1120/AV 225-1120	X	A
MONTALBANO, John Value Engineer Tobyhanna Army Depot ATTN: SDSTO-PE Tobyhanna, PA 18466-5081 (717)894-7283/AV 795-7283	X	B
MOORE, Jerry USAEMRA Vint Hill Farms Station Warrenton, VA 22186-5114 (703)347-6215/AV 249-6781	No	B

	STAYING AT XEROX	ATTENDING WORKSHOPS
DY, Get Dir Design Policy Management Div. Naval Facilities Engineering Cmd 200 Stovall Street, 04M1 Alexandria, VA 22332-2300 (703)694-1425	No	E
UGRAVE, Capt. Alvin W., Jr. Deputy Prog. Mngr., PML 550 (Navy Spares Competition Advocacy Logistics Technology) Naval Supply Systems Command (SUP 30) CM #3, Room 700 Washington, DC 20376 (202)694-9110/AV 224-9110	X	B
UKHERJEE, Mrinal K. General Engineer DoD Product Engineering Services Office c/o DLA, Cameron Station Alexandria, VA 22304-6183 (703)756-2320/AV 289-2320	No	E
YERS, Gina Productivity Coordinator Department of the Navy W. Taylor Navy Ship R&D Center Code 011-1 Bethesda, MD 20084 (301)227-1431	No	A
EMECEK, Larry WSMC/QAES Vandenberg AFB, CA 93437 AV 275-6817		D
ICHOLS, Donald L. VE Consultant Analysis & Technology, Inc. Rt. 2, P.O. Box 220 North Stonington, CT 06359 (203)599-3910	X	A
IELSEN, Mark A. VE Program Manager Mmear Hill Air Force Base Mmear Hill AFB, UT 84056 (801)777-7481/AV 458-7481	No	A

ERRATA SHEET

Additions After Oct. 23, 1984

	STAYING AT XEROX	ATTENDING WORKSHOPS
ARNOLD, Rudolf C. Asst Chief, Construction Branch Department of the Army North Pacific Div., Corps of Engr. P.O. Box 2870 Portland, OR 97208-2870 (503/221-3774)	X	E
AYERS, Donald Senior Tech. Spec Teledyne CAE, Turbine Engines 1300 Laskey Road Toledo, OH 43612-0971 (419) 470-3335/AV 580-6732	No	C
BARKLAOW, George Contract Negotiator ASD/TAMK HQs, ASD Wright Patt AFB, OH 45433	X	C
BLANTON, Guy LT CDR 09A1 Acqn Coordination Officer Southern Division Naval Facilities Engineering Command 2144 Melbourne St. P.O. Box 10068 Charleston, SC 29411 (803) 743-4850/AV 794-4850	X	E
EFFLER, Richard C. CODE 04B Value Engineer Chesapeake Div., NAVFACENGCOM Bldg 212 Washington Navy Yard Washington, DC 20374-2121 (202) 433-3316/AV 288-3316	No	E
HUBBELL, Nicholas Military Specialist HQs, TECOM ATTN: Evaluation Div. Bldg 315, Aberdeen Pvg Gnd, MD 21005 (301) 278-5221/AV 283-5221	X	A

	STAYING AT XEROX	ATTENDING WORKSHOPS
OBKEVICH, Leo PM Tanks VE Coordinator U.S. Army Tank Automotive Command ATTN: DRSTA-GV Warren, MI 48090 AV 786-8190	X	A
KE, Robert W. Engineer DCASMA Milwaukee Defense Logistics Agency 310 West Wisconsin Avenue Suite 340 Milwaukee, WI 53203 (414)291-4364	X	C
KOFF, Robert L. Value Engineering Program Manager Harry Diamond Labs ATTN: DELHD-IT-EA 2800 Powder Mill Road Adelphi, MD 20783-1197 (202)394-2677/AV 290-2677	X (Nov 1 Only)	C
AKAWA, Ryoji Electronics Engineer NAVELEX - Crystal City NC#1, Code 81343 Washington, DC 20363 (202)692-7227	X	C
NG, LT1 Sammy J. Staff Contracting Officer HQ TAC/LGCP Langley AFB, VA 23665-5001 (804)764-5371/AV 432-5371	X	E
RICK, Bill VE Monitor AD/PMD Bldg. 350, Room 521 Eglin AFB, FL 32542 (904)882-3880/AV 872-3880	X	C
YCH, Michael N. Program Director, Value Engineering General Services Administration 18th & F Streets, NW Washington, DC 20405 (202)566-0690		E

	STAYING AT XEROX	ATTENDING WORKSHOPS
WEDEMEYER, Karl E. Director of Economic Evaluation Aerospace Corp. P.O. Box 92957 Los Angeles, CA 90009 (213)648-6632	No	C
WEISS, BG Bernard L. Director of Contracting & Manufacturing Policy HQs, USAF/RDC The Pentagon, Room 4C261 Washington, DC 20330-5040	X (31 Oct only)	A (Chairman)
WHITAKER, Marshall VE Prog. Mgr. HQ AFLC/MMEA Wright-Patterson AFB, OH 45433 AV 787-5570	X	A
WHITE, James Chief, Productivity Improvement Branch Army Missile Command ATTN: AMSMI-FM Redstone Arsenal, AL 35898-5000 AV 746-5226	X	A
WILSON, Gary W. OC-ALC VE Program Manager OC-ALC/MMEA Tinker Air Force Base Tinker AFB, OK 73145 (405)736-5018/AV 336-5018	X	B
WOOD, William P. Director, VE Martin Marietta Aerospace P.O. Box 5837 Administration Tower MP-275 Orlando, FL 32855 (305)356-3189	X	A
WOODS, V. Lehman Principal Analyst Analysis & Technology, Inc. Rt. 2, P.O. Box 220 North Stonington, CT 06359 (203)599-3910	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
AYKES, DONALD		
~~WAGNER, William Q.~~ SENIOR TECH. SPECIALIST ~~Eng. Section Mngr. - Prod. Assurance~~ Teledyne CAE, Turbine Engines 1300 Laskey Road Toledo, OH 43612-0971 (419)470-3335/AV 580-6732	No	C
WAKEFIELD, Ellsworth Project Manager Nuclear Munitions ATTN: AMCPN-NUC-A Dover, NJ 07801-5001 (201)724-2118	X	A
WALDECK, Sandra A. Chief, Replenishment Parts Breakout Branch Defense Construction Supply Center ATTN: DCSC-STP Columbus, OH 43216-5000 AV 850-1795	X	B
WALLACE, William Division Director NAVELEX - Crystal City NC#1, Code 813 Washington, DC 20363 (202)692-7284/AV 222-7284	X	C
WALTERS, David QA Coordinator for VE U.S. Army Tank Automotive Command ATTN: DRSTA-GV Warren, MI 48090 AV 786-6888	X	B
WAMSER, Thomas A., P.E. Industrial Engineer Director USAMETA ATTN: DRXOM-SE Rock Island, IL 61299-7040 (309)794-4041/AV 793-4041	X	D
WARE, John S. VE Coordinator Defense Logistics Agency Defense Contract Administration Services Management Area 240 US RTE 22 Springfield, NJ 07081-3170 (201)564-8371/AV 994/8371	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
TUTEJA, Balbir J. Mechanical Engineer U.S. Army Tank Automotive Command ATTN: DRSTA-TDS Warren, MI 48090 (313)574-0549/AV 786-5626	X	A
VARANKAR, Vincent J. VE Program Manager New Cumberland Army Depot ATTN: SDSVC-RP-M New Cumberland, PA 17070 (717)782-7119/AV 977-7119	X	B
VENEGAS, Luis Value Engineering Specialist OICC-TRIDENT 293 Point Peter Road St. Mary's, GA 31558 (912)673-2320/AV 860-2320	X	E
VERNA, John J. Procurement Analyst Defense Personnel Support Center 2800 S. 20th Street ATTN: DPSC-P Philadelphia, PA 19101 (215)952-2614/AV 444-2614	X	B
VICK, Gerald A. Colonel, USA The Joint Chiefs of Staff ATTN: OJCS/C3SA The Pentagon Washington, DC 20301-5000 (202)697-6224/AV 227-6224	X	A
VLASAK, Stanley J. LTC Dep. Dir., Combat Theatre Communications Sys. Div. Deputy for Tactical Systems HQ, ESD(AFSC) Hanscom AFB, MA 01731 (617)271-3138	X	A
WAGLER, Gary Supv. Contract Specialist HQ, AMCCOM ATTN: AMSMC-PCG-A Rock Island, IL 61299-6000 (309)794-4379/AV 793-4379	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
THOMAS, Geoffrey O. Program Dir., Engineering Div. DoD IG (Audit/Map) 1300 Wilson Blvd., 12th Floor Arlington, VA 22209 (202)697-6297		A
THORNELL, Stephen Chemical Engineer Power Sources Division U.S Army ET&D Labs Fort Monmouth, NJ 07703-5302 (201)544-4886	X	D
THORSON, Keith R. Manager, MAVERICK Programs VE Hughes Aircraft Corp. M/S 801-A1 Tucson, AZ 85734 (602)295-6713	X	C
TISLOW, Larry VE Prog. Mgr. Defense Electronics Supply Center ATTN: SVA Kettering, OH 45444 (513)296-5141		C
TRIVETT, Ms. R. D. Chief, Tech. Data Mgmt. Office Defense Construction Supply Center ATTN: DCSC-ST 3990 E. Broad St. Columbus, OH 43216-5000 (614)238-3208/AV 850-3251	X	B
TROBAUGH, Cynthia Industrial Engineer NAVELEX - Crystal City NC#1, Code 813424 Washington, DC 20363 (202)692-7227/AV 222-7227	X	C
TUFTY, Hal Tufty Associates 3812 Livingston St., NW Washington, DC 20015 (202)347-8998	No	A (Nov 1 only maybe)

	STAYING AT XEROX	ATTENDING WORKSHOPS
STOCKER, Florian R. Senior Operations Staff Officer DoD, National Security Agency Ft. George Meade, MD 20755 688-8193/AV 235-8193	No	B
STOKES, Miles Space Division/YXB P.O. Box 929, WPC Los Angeles, CA 90009 AV 833-0902	No	A
STOKLEY, Alfred Program Analyst Department of the Army PM Joint STARS ATTN: DRCPM-JS-FM Ft. Monmouth, NJ 07703-5306 (201)544-5123/AV 996-5123		D
STRINGER, Sue C. Value Engineering Program Manager Naval Air Rework Facility Naval Air Station Jacksonville, FL 32212 (904)772-2105/AV 942-2105	X	D
SWANK, Roland Vice President Applied Common Sense, Inc. 1378 Berwyn Paoli Rd. Berwyn, PA 19312 (215)647-2232	X	A
TAMMEARU, Ted Manager, Value Engineering Honeywell Inc. Shady Oak Building 10400 Yellow Circle Drive Minnetonka, MN 55343 (612)931-4123	X	C
TERRY, Samuel VE Program Manager HQ, AFSC-PMDE Andrews AFB Washington, DC 20334 (202)981-2406/AV 858-2406		A

	STAYING AT XEROX	ATTENDING WORKSHOPS
SMITH, Ted VE Coordinator Department of the Army U.S. Army Electronics Technology and Devices Laboratory Fort Monmouth, NJ 07703-5302 (201)544-3167/AV 995-3167		C
SNIDAR, Richard R. General Engineer Commander U.S. Army Information Research Center P.O. Box 845 Fort Huachuca, AZ 85613-5000 (602)538-7855/AV 879-7855	X	C
STACY, Capt. Ed Program Manager Naval Material Command MAT 06B Washington, DC 20360 (202)692-1106/AV 222-1106	No (Nov 1 Only)	B
STAFFORD, O. Lyle Management Analyst Pine Bluff Arsenal Pine Bluff, AR 71611 (501)541-3749/AV 966-3749	X	A
STEELY, Phillip W. Spare VE/Value Analysis HQ AFLC/PMPL Wright-Patterson AFB, OH 45433 AV 787-6040	X	B
STEVENSON, Jack T. VE Coordinator Commander, U.S. Army TACOM ATTN: DRSTA-RGT Warren, MI 48090 (313)574-6047/AV 786-6047	X	A
STIMSON, Richard OUSDRE(AM)IP Pentagon Washington, D.C. (202)695-7917		

	STAYING AT XEROX	ATTENDING WORKSHOPS
SEWARD, Don R. VE Program Manager U.S. Army Aviation Systems Command 4300 Goodfellow Blvd. ATTN: DRSAV-ELSV St. Louis, MO 63120-1798 (314)263-1672/AV 693-1672	X	C
SHALLMAN, William S., PhD Head, Systems Engineering Department U.S. Army Management Engineering Training Activity ATTN: DRXOM-SE Rock Island, IL 61299-7040 (309)794-4041/AV 793-4041	X	D
SHAW, Randy VE Program Manager USAERADCOM NVEOL ATTN: DELNV-SE Ft. Belvoir, VA 22060 (703)664-5683/AV 354-5683		A
SHIMKUS, Daniel F. VE Program Manager U.S. Army Natick R&D Center ATTN: STRNC-EPT Natick, MA 01760 (617)651-4352/AV 256-4352	X	D
SHIN, Soo Young SPRINT Project Leader USAERADCOM NVEOL ATTN: DELNV-SE Ft. Belvoir, VA 22060 (703)664-5683/AV 354-5683	No	B
SIMONIS, Robert W. Chief,Chemical and Special Systems Branch HQ, U.S. Army Armament Materiel Readiness Command ATTN: DRSMC-PDE-A (R) Rock Island, IL 61299 (309)794-3582	X	C
SMIST, Richard Industrial Engineer The Ballistic Missile Office AFSC/PMD Norton Air Force Base Norton AFB, CA 92409 (714)382-7806/AV 876-7806	X	A

	STAYING AT XEROX	ATTENDING WORKSHOPS
SANDEL, Alex VE Program Manager U.S. Army Tank Automotive Command ATTN: DRSTA-GV Warren, MI 48090 AV 786-5037	X	A
SANDFORD, Richard VE Program Manager HQ, U.S. Army Communications-Electronics Command ATTN: DRSEL-ED-TO Ft. Monmouth, NJ 07703-5016 (201)532-2318/AV 992-2318	X	A
SCHAFFER, Robert J. DLA VE Program Manager Defense Logistics Agency ATTN: DLA-SE Cameron Station Alexandria, VA 22314 (202)274-6775/AV 284-6775	No	B
SCHNEIDER, Jeffrey Value Engineer Munitions Production Base Modernization Agency ATTN: SMCPM-PBM-TV, Bldg. 171 Dover, NJ 07801 (201)724-3517/AV 880-3517	X	A
SCHOENBERG, George R. VE Validator/Industrial Eng. Tech. U.S. Army Tank Automotive Command ATTN: DRSTA-VA Warren, MI 48090 (313)574-6007/AV 876-6907	X	A
SCHUNK, Arthur M. Contracts Manager Coatings Service Department Union Carbide Corporation 2611 Waterfront Pkwy., East Drive Indianapolis, IN 46224 (317)299-1930	X	C
SCOTT, Andrew V. VE Specialist Defense Personnel Support Center 2800 S. 20th Street ATTN: DPSC-L Philadelphia, PA 19101 (215)952-4229	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
REED, Donald B. Value Engineer Westinghouse Electric Co. P.O. Box 746, MS 4810 Baltimore, MD 21203 (301)765-4504	X	C
RHOE, Ray W. Senior Mech. Engineer U.S.A. Signals Warfare Laboratory Vint Hill Farms Station Warrenton, VA 22186-5100 (703)347-6368/AV 249-6368	No	B
RITTER, James A. VE Program Manager Corpus Christi Army Depot ATTN: SDSCC-CMI Corpus Christi, TX 78419 (512)939-2905/AV 861-2905	X	B
ROGERS, Lee Staff Engineer Defense Materiel Specifications and Standards Office (DMSSO) 5203 Leesburg Pike, Suite 1403 Falls Church, VA 22041 (703)756-2343/AV 280-2343	X	A
ROSEN, Carl Electronic Engineer Electronic Warfare Laboratory (ERADCOM) Ft. Monmouth, NJ 07703 (201)544-4135/AV 995-4135	X	B
RYSON, Paul D. Supervisor, Product Engineering Division Commander, FORCOM DCSCOMPT ATTN: AFCO-TIA(G) Ft. McPherson, GA 30330 (404)362-7291/AV 797-7291	X	A
SAFFORD, Robert A. Manager, Program Construction & Site Activities OTH-D Program HQ ESD(AFSC) Burlington, MA 01731 (617)271-7997	X (Nov 1 only) (will arrive at noon)	A

	STAYING AT XEROX	ATTENDING WORKSHOPS
POPADICH, Stephen Value Engineer U.S. Army Engineer Division, North Atlantic 90 Church St. New York, NY 10007 (212)264-7445	X	E
POWERS, William O. VE Program Manager San Antonio ALC/MMEA San Antonio, TX 78243 AV 945-8888	X	D
PRYOR, Howard M. Professor, Contracting Management AFIT/LSP Wright Patterson Air Force Base WPAFB, OH 45433 (513)255-3944/AV 785-3944	X	D
PYE, Charles E. Head, MWR/NAF UNIT HQ, Marine Corps Code LFF-1 Washington, DC 20380 (202)694-1966/AV 224-1929	No	E
PYLES, Charles Industrial Engineer OOALC, Hill AFB Ogden, UT 84404 (801)777-5044/AV 458-5044	No	D
QUINDRY, Thomas L. General Engineer DoD Product Engineering Services Office c/o HQ, Defense Logistics Agency Cameron Station Alexandria, VA 22314 (703)756-2323/AV 289-2323	No	D
RASMUSSEN, Jorgen Head, VE Office Naval Ocean Systems Center Code 902 San Diego, CA 92152 (619)225-2213/AV 933-2213	X	C

	STAYING AT XEROX	ATTENDING WORKSHOPS
PARK, Bruce Value Analysis Engineer U.S. Army Aviation Systems Command 4300 Goodfellow Blvd ATTN: DRSAV-ELSV St. Louis, MO 63120-1798 (314)263-1672/AV 693-1672	X	B
PATE, Benny L. Production Engineering Technician Belvoir R&D Center Logistics Support Lab ATTN: STR-BE-GM Ft. Belvoir, VA 22060 (703)664-2879/AV 354-2879	X	D
PAULSON, Laurence W. General Engineer DoD Product Engineering Services Office c/o HQ, Defense Logistics Agency Cameron Station Alexandria, VA 22314 (703)756-2320/AV 289-2320	No	B
PEGUES, Patricia A. VE Coordinator HQ, U.S. Army Armament Materiel Readiness Command ATTN: DRSMC-PDE-A (R) Rock Island, IL 61299 (309)794-3102/AV 793-3102	X	C
PERLMUTTER, James Management Analyst ATTN: DACA-RMP The Pentagon Washington, DC 20301 (202)695-1120/AV 225-1120	X	A
PERRYMAN, Fred SA-ALC/PMDM Kelly AFB Antonio, TX 78241 (512)925-7066/AV 945-7066	X	C
PONIKVAR, LTC Ron HQs, USAMC ATTN: AMCPP-P 5001 Eisenhower Avenue Alexandria, VA 22333 (202)274-5676/5685	No	B (Speaker - Nov 1 Only)

	STAYING AT XEROX	ATTENDING WORKSHOPS
NOBES, Charles J. Director, Contracts Division P.O. Drawer 18 Marine Corps Logistics Base Albany, GA 31704 (912)439-6735/AV 460-6735	X	B
NUSBAUM, Michael Engineer Asst. Naval Supply Systems Command Code SUP 30, CM #3 Washington, DC 20376 (202)694-9110/AV 224-9110	X	B
O'BRIEN, Hugh Value Engineering Coordinator Naval Supply Systems Command ATTN: SUP 032 Washington, DC 20376 (202)695-6570/AV 225-6570	X	B
O'CONNOR, Thomas Group Director US GAO Room 4031 441 G. St., NW Washington, DC 20548 (202)275-4068	No	D
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